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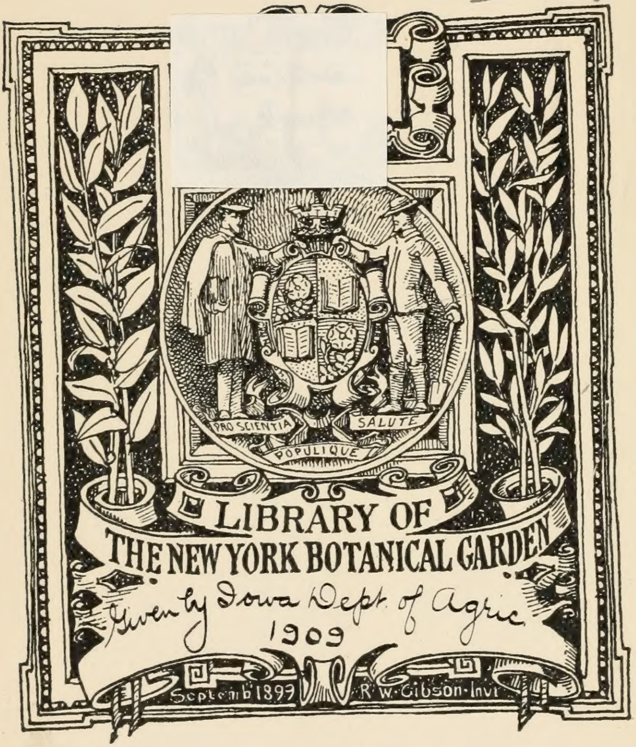
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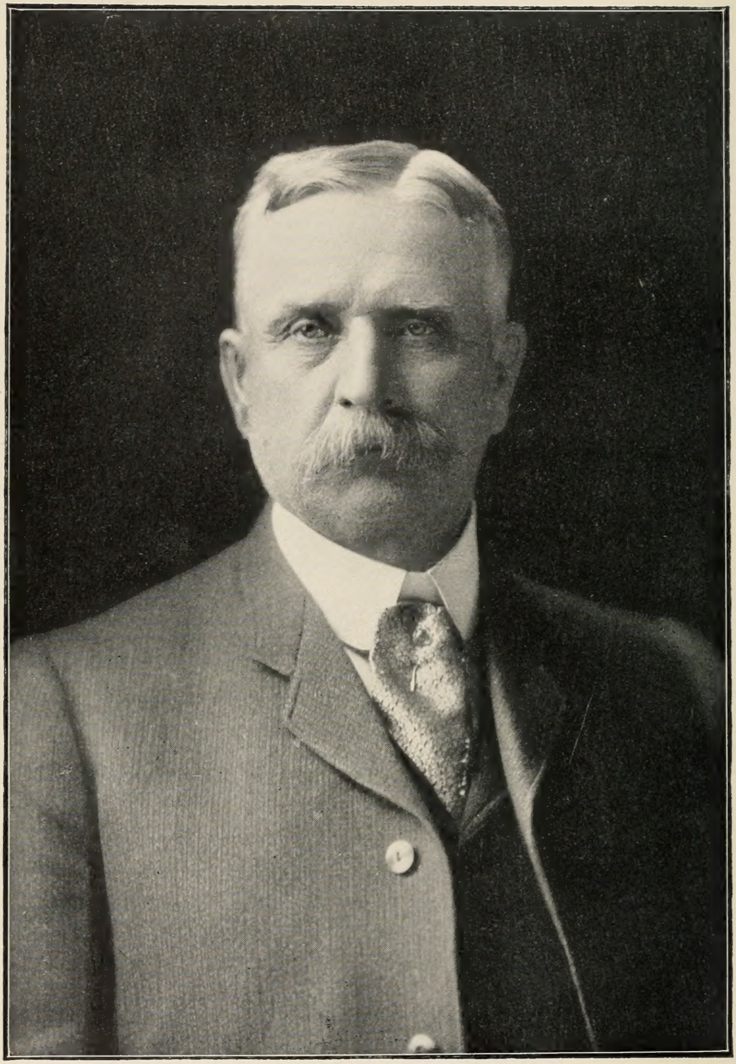

HON. W. W. MORROW, AFTON, IA.

Ex-President State Board of Agriculture.

Present State Treasurer.

Served as Director of Iowa State Agricultural Society year of 1899, member of Iowa State Board of Agriculture years of 1900 and 1901, as Vice-President of the Board year of 1902, and President of the Board years of 1903, 1904, 1905 and 1906.

SEVENTH ANNUAL

Iowa Year Book of Agriculture

Issued by the

Iowa Department of Agriculture

1906

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LETTER OF TRANSMITTAL.

OFFICE OF
IOWA STATE DEPARTMENT OF AGRICULTURE,

DES MOINES, IOWA, March 26, 1907.

To His Excellency, ALBERT B. CUMMINS, Governor of Iowa:

SIR:—I have the honor to transmit herewith the Seventh Annual IOWA YEAR BOOK OF AGRICULTURE, for the year 1906.

Respectfully submitted,

JOHN C. SIMPSON,
SECRETARY STATE BOARD OF AGRICULTURE.

APR 13 1909

PREFACE.

The Iowa Year Book of Agriculture is published by the State Department of Agriculture, and is for free distribution. It is issued during the spring, owing to a large part of the matter provided by statute to be published therein, not being available until close of the calendar year.

In this volume will be found the statistics of farm crops, weather conditions and rainfall for the year 1906, papers and discussions before the State Farmers' Institute, held in December, 1906; papers read before a number of County Farmers' Institutes; timely and instructive articles from the press; valuable information on various subjects of interest to the farmer compiled from literature sent out by the Department of Agriculture at Washington; results of experiments conducted by the various agricultural experiment stations; live stock awards of the Iowa State Fair; secretary's report for the year, giving a comprehensive and complete statement of all financial transactions of the Department during the fiscal year ending November 30, 1906; extracts from the Iowa Swine Breeders' meeting, State Dairy Association meeting; State Dairy and Food Commissioner's Report; report of the committee from the State Board of Agriculture on adulteration of commercial feeding stuffs, stock foods and seeds, with bill passed by the Thirty-second General Assembly to remedy same; synopsis of State Board and Committee meetings during the year; reports of County and District Fair Associations; County Farmers' Institutes, together with a directory of societies, associations and other organizations representing agricultural interests in Iowa and other states.

J. C. SIMPSON,
Secretary State Board of Agriculture and
Editor Iowa Year Book of Agriculture.

DES MOINES, IOWA, April 1, 1907.

COMMITTEES.

YEAR OF 1907.

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IOWA WEATHER AND CROP SERVICE:

J. R. SAGE, Director..DES MOINES.

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STATISTICAL TABLES

OF

Iowa's Principal Farm Crops.

CORN CROPS—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year.	Average yield per acre.	Total yield.	Average farm value per bushel Dec. 1.	Total value.	Acreage.
1880	41	230,633,200	$.25	$ 57,658,300	5,625,200
1885	33	224,636,522	.23	51,666,400	6,803,834
1890	28	239,675,156	.41	98,266,814	8,559,827

CORN CROPS—1896-1906.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year.	Average yield per acre.	Total yield.	Average farm value per bushel Dec. 1.	Total value.	Acreage.
1896	39	312,692,210	$.14	$ 43,916,900	8,043,390
1897	29	239,452,150	.17	40,706,860	8,253,522
1898	34.5	289,214,850	.23	66,519,400	8,396,286
1899	36.3	306,852,710	.23	70,429,410	8,460,521
1900	40.3	345,055,040	.27	93,164,860	8,618,660
1901	26.2	227,908,850	.50	113,954,000	8,687,480
1902	34	296,950,230	.28	83,432,700	8,700,000
1903	31	230,511,310	.36	82,984,071	7,398,320
1904	36	323,853,330	.35	113,348,665	9,000,000
1905	37.2	345,871,840	.35	121,055,144	9,285,150
1906	41	388,836,252	.33	128,155,143	9,443,960
Average	35	300,654,452	$.29	$ 87,060,686	8,571,571

OATS—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year.	Average yield per acre.	Total yield.	Average farm value per bushel Dec. 1.	Total value.	Acreage.
1880	35	42,288,800	$.23	$ 9,496,424	1,179,680
1885	32.5	71,737,900	.21	15,064,959	2,207,320
1890	29	80,002,735	.38	30,401,039	2,758,715

OATS—1896-1906.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year.	Average yield per acre.	Total yield.	Average farm value per bushel Dec. 1.	Total value.	Acreage.
1896	26	73,450,000	$.12	$ 8,814,000	2,825,000
1897	30	132,517,150	.16	21,211,380	4,405,782
1898	32	139,915,340	.21	29,383,220	4,299,243
1899	34.5	140,647,300	.19	26,722,980	4,059,557
1900	35	138,832,300	.20	27,766,460	3,991,690
*1901	32	114,883,000	.35	40,209,230	3,790,220
1902	31	92,907,900	.24	22,297,000	3,770,624
**1903	25.9	99,012,660	.30	29,703,798	3,822,822
1904	29.4	118,435,570	.26	30,793,284	4,018,980
1905	33.8	146,439,240	.25	36,609,810	4,177,545
1906	34	142,036,530	.27	38,349,878	4,166,800
Average	31.2	121,734,272	$.23.3	$ 24,834,651	3,940,430

*Short corn crop.
**Excessive moisture.

WHEAT—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year.	Average yield per acre. Spring wheat.	Average yield per acre. Winter wheat.	Total yield. Spring wheat.	Total yield. Winter wheat.	Total yield. All wheat.	Average farm price December 1.	Total farm value December 1.	Acreage.
1880	10.5				36,099,760	$.82	$29,501,803	3,437,948
1885	12.				31,776,108	.61	19,383,426	2,618,009
1890	11.7				25,114,552	.78	19,589,350	2,092,893

WHEAT—1896-1906.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year.	Average yield per acre. Spring wheat.	Average yield per acre. Winter wheat.	Total yield. Spring wheat.	Total yield. Winter wheat.	Total yield. All wheat.	Average farm price December 1.	Total farm value December 1.	Acreage.
1896	13.	17	7,047,235	3,351,550	10,398,785	$.57	$ 6,020,000	739,245
1897	13.4	13	12,941,600	1,671,454	14,613,054	.74	10,813,650	1,222,974
1898	14.8	16.5	19,152,352	3,168,916	22,321,268	.53	11,602,000	1,484,682
1899	12.7	11	19,574,792	226,040	19,900,830	.58	10,701,490	1,559,931
1900	14.3	13.3	20,280,280	1,018,070	21,288,350	.60	12,799,370	1,492,630
1901	15.3	17.6	17,429,230	865,770	18,295,000	.60	10,965,000	1,188,239
1902	13.	18.	12,680,800	825,045	13,532,845	.53	7,062,640	1,021,281
1903	12.6	16.9	9,481,350	1,435,380	10,916,730	.67	7,167,643	837,422
1904	9.1	14.3	7,080,430	1,017,000	8,097,430	.89	7,044.809	846,070
1905	14.4	20.2	5,155,760	1,253,020	6,408,780	.72	4,614,321	420,068
1906	15.	23.	5,603,880	1,566,050	7,169,930	.64	4,579,697	443,810
Average	13.4	16.4	12,402,519	1,490,754	13,903,909	$.64	$ 8,488,238	1,023,304

BARLEY—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year.	Average yield per acre.	Total yield.	Average farm value per bushel Dec. 1.	Total value.	Acreage.
1880	23	4,600,000	$.42	$ 1,932,000	200,000
1885	27	5,737,095	.33	1,893,241	212,485
1890	24	3,664,368	.47	1,722,254	152,682

BARLEY—1896-1906.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year.	Average yield per acre.	Total yield.	Average farm value per bushel Dec. 1.	Total value.	Acreage.
1896	29	15,881,618	$.20	$ 3,176,320	547,642
1897	25	14,076,850	.23	3,237,670	551,867
1898	27.5	14,138,000	.30	4,209,740	509,589
1899	25.6	14,719,310	.30	4,415,570	557,598
1900	25.3	12,695,200	.33	4,189,410	501,740
1901	24.2	14,654,410	.44	6,447,940	604,610
1902	25	15,380,910	.33	5,075,710	594,070
1903	24.7	12,179,790	.37	4,506,522	493,108
1904	25	12,317,710	.34	4,188,021	493,370
1905	27.5	15,566,770	.33	5,137,034	565,700
1906	26.5	14,858,830	.36	5,349,178	558,870
Average	26	14,224,472	$.32	$ 4,539,374	543,469

RYE—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year.	Average yield per acre.	Total yield.	Average farm value per bushel Dec. 1.	Total value.	Acreage.
1880	14	574,000	$.38	$ 218,120	41,000
1885	15	1,710,000	.42	718,200	114,000
1890	16	1,608,960	.51	820,570	100,560

RYE—1896-1906.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year.	Average yield per acre.	Total yield.	Average farm value per bushel Dec. 1.	Total value.	Acreage.
1896	16	1,891,716	$.25	$ 486,680	121,670
1897	15	3,490,344	.34	1,186,710	226,198
1898	16	3,370,550	.38	1,280,800	210,309
1899	16.3	2,061,160	.40	824,460	126,236
1900	15.6	1,621,130	.43	697,300	103,680
1901	15.8	859,630	.48	859,630	54,390
1902	17	882,830	.40	353,132	55,150
1903	15.6	1,923,060	.44	846,146	123,273
1904	15	1,517,090	.54	819,228	99,590
1905	18	1,283,500	.52	667,420	71,305
1906	17.5	1,093,160	.48	520,719	62,530
Average	16.2	1,817,652	.42	$ 776,384	114,030

HAY—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year.	Average yield. Tame Hay.	Total yield tons.	Average yield. Wild Hay.	Total yield tons.	Total yield all hay. Tons.	Average value per ton. Tame Hay.	Average value per ton. Wild Hay.	Total value. all hay.	Acreage.
*1880									
*1885									
1890	1.5	4,991,335				6.84		34,140,731	3,327,557

*No authentic data obtainable.

HAY—1896-1906.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year.	Tame Hay		Wild Hay		Total yield all hay. Tons.	Average value per ton. Tame Hay.	Average value per ton. Wild Hay.	Total value all hay.	Acreage
	Average yield.	Total yield tons.	Average yield.	Total yield tons.					
1896	1.5	3,376,440	1.5	2,325,000	5,701,440	$4.50	$3.30	$22,782,000	3,800,960
1897	1.6	3,362,287	1.3	1,939,117	5,301,320	4.50	3.70	22,304,000	3,315,972
1898	1.7	3,852,561	1.2	1,645,419	5,498,080	4.30	3.50	22,281,000	4,104,967
1899	1.5	3,852,941	1.2	1,458,195	5,311,130	5.75	4.90	29,350,000	3,742,655
1900	1.4	3,609,010	1.	1,530,050	5,139,060	6.50	5.00	31,120,000	4,078,960
1901	1.4	3,711,680	1.2	1,268,700	4,980,380	8.25	6.30	38,712,000	3,608,450
1902	1.8	4,439,040	1.3	1,202,860	5,641,900	6.80	5.50	36,787,322	3,391,408
1903	1.9	5,216,404	1.3	1,191,345	6,407,749	5.75	4.95	35,891,480	3,651,894
1904	1.5	4,499,090	1.2	1,091,590	5,590,680	5.62	4.50	30,197,040	3,707,298
1905	1.8	6,477,300	1.2	1,313,310	7,790,610	5.50	4.50	41,535,045	4,692,925
1906	1.3	4,892,950	1.2	1,110,690	6,003,640	7.50	5.50	42,805,920	4,418,600
Average	1.58	4,299,064	1.23	1,461,479	5,760,544	$5.90	$4.70	$32,160,528	3,864,917

FLAX—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year.	Average yield per acre.	Total yield.	Average farm value per bushel Dec. 1.	Total value.	Acreage.
1880	10	1,034,200	$1.00	$1,034,200	103,420
*1885			.94	2,503,293	
1890	10.5	2,929,081	1.10	3,276,989	283,722

*No other data.

FLAX—1896-1906.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

Year.	Average yield per acre.	Total yield.	Average farm value per bushel Dec. 1.	Total value.	Acreage.
1896	9.5	1,946,720	$ .95	$1,135,000	199,128
1897	10	2,498,600	.87	2,173,782	249,882
1898	10.5	2,376,600	.80	1,901,280	225,014
1899	11.2	1,597,790	1.04	1,661,898	142,175
1900	11.7	1,222,980	1.50	1,834,470	108,850
1901	18.8	916,890	1.29	916,890	104,140
1902	8.	755,350	1.00	725,350	94,767
1903	8.7	355,160	.78	277,024	40,823
1904	11	591,140	1.15	679,811	51,370
1905	9.8	173,770	.90	156,393	17,732
1906	10.7	205,280	.97	200,091	19,160
Average	10.	1,149,116	1.02	$1,041,998	113,912

POTATOES—1880, 1885, 1890.

Statistics Compiled from Reports of Secretary of Iowa Agricultural Society.

Year.	Average yield per acre.	Total yield.	Average farm value per bushel Dec. 1.	Total value.	Acreage.
1880	95	10,165,000	$.35	$ 3,557,750	107,000
1885	82.	12,874,000	.40	5,149,600	157,000
1890	49	8,332,352	.81	6,749,205	170,048

POTATOES—1896-1906.

Statistics Compiled from Reports of Crop Service Division of Iowa State Department of Agriculture.

1896	87.	14,814,795	$.21	$2,962,950	170,285
1897	60.	10,051,910	.45	4,523,360	163,248
1898	76.	12,538,410	.31	3,826,900	164,456
1899	98.	15,252,934	.24	3,660,714	154,243
1900	78.	10,850,900	.40	4,340,360	149,680
*1901	37.4	5,098,460	.90	4,588,610	136,300
1902	91.	12,051,670	.34	4,095,650	138,484
**1903	53.8	6,082,694	.75	4,562,020	113,433
1904	125.	14,255,680	.28	3,991,590	113,250
1905	84.	9,352,190	.50	4,676,045	111,335
1906	101.	11,697,500	.48	5,614,800	115,310
Average	81.	11,095,194	.44	$ 4,276,636	139,003

*Very dry.
**Very wet.

PART I.

REPORT OF SECRETARY

John C. Simpson

FOR YEAR ENDING NOVEMBER 30, 1906

TO

STATE AGRICULTURAL CONVENTION

ASSEMBLED IN ROOMS OF DEPARTMENT OF AGRICULTURE
STATE HOUSE, DECEMBER 12, 1906.

Mr. President, Gentlemen of the Convention: In compliance with the wishes of the State Board of Agriculture I desire to make a brief report of the work of the Department for the past season.

No funds having been provided for carrying on the work as outlined in Section 1657, Chapter 3, Code Supplement of Iowa, the Department can only make such investigations, etc., as can be made with little or no expense. Seeing the great need of some legislation in regard to pure foods, the Board a few years ago set aside a small amount from the state fair fund to meet the expense of an investigation along this line. The report of the pure food committee through the Board of Agriculture was presented to the Thirtieth General Assembly, together with a draft of a pure food bill. This Assembly did not see fit to enact any legislation for purer foods. Further investigations were made by the Board, and again the report of their findings and a draft of the pure food bill was presented to the Thirty-first General Assembly during the winter of 1906. The bill as presented, with a few alterations, was passed and became effective July 4th of this year. The provisions of the bill combined the offices of the State Dairy and Food Commissioner, whose duty it is to see that the law is enforced. The full report of the committee from the State Board, together with an exact copy of the bill as finally passed by the Thirty-first General Assembly, is published in the Iowa Year Book of Agriculture for 1905, pages 135-153 inclusive. No provision being made for the publication of any bulletins containing a report of the investigations made by the Board, the expense of the bulletin containing the report, as presented to the General Assembly, had also to be met out of the State Fair fund. The statute provides only for the publication of the Iowa Year Book of Agriculture, but leaves it to the State Executive Council to say how many copies shall be printed. For the past three or four years three thousand copies of the Year Book have been printed annually. This year the book was from four to five months late, owing to the great amount of work in the hands of the State Printer and his inability to get it in type earlier.

I believe that provision should be made to meet the expenses of the department in the investigations which it makes, printing of bulletins, etc., without using the State Fair funds for this purpose. Until the State Fair grounds are fully equipped the surplus State Fair fund is needed for that purpose.

The department, through its committee on adulteration of foods, commercial food stuffs, seeds and other products, has been carrying on some investigations relative to the adulterations of commercial stock foods the past year. Their report will be submitted to the Board at its first meeting, and their findings will be presented to the Thirty-second General Assembly in January.

A great many complaints are received from parties against the adulteration of grass and other seeds, claiming they are mixed with all kinds of seeds from obnoxious weeds. This matter will probably be given attention by the Department during the next year.

THE STALLION SERVICE LAW.

The stallion service law was enacted by the Thirty-first General Assembly and made it the duty of the department to carry out its provisions. It provides that every owner or keeper of pure bred and registered stallions standing for public service, or kept for sale or exchange, who represents said stallion or stallions to be pure bred or registered, must cause the same to be registered in some stud book recognized by the Department of Agriculture at Washington, D. C., and obtain a certificate of registration of such animal. This certificate is then to be forwarded to the secretary of the Iowa State Board of Agriculture, whose duty it is to pass upon the correctness and genuineness of such certificate. If found to be correct the secretary is then to issue a certificate under the seal of the department. This law became effective on the 4th of July, 1906. Hundreds of bogus certificates issued by fake registration associations have been sent in for examination, showing that the people have been greatly imposed upon by unscrupulous parties who make it a practice to issue these fake certificates for no other purpose than to misrepresent and defraud. As the law now stands, any party who owns or keeps a stallion for public service, or sale, and represents him to be a pure bred and registered horse, must show a certificate issued under the seal of the Iowa Department of Agriculture or be subjected to the penalty. There is nothing in the provisions of this law which prohibits the standing for public service of a grade or cross bred horse, but he must not be represented to be other than a grade or cross bred.

The last reports in the State Auditor's office showed six thousand and seventy-nine stallions in the State. At the close of the fiscal year, December 1st, but eighteen hundred and thirty-seven certificates had been issued. As the service season for 1906 was practically over before the law went into effect, the number to be enrolled will probably be increased to a large extent before the next season opens and will probably run up to three thousand. Should the enrollment reach this number it would still leave more than fifty per cent of the stallions standing for public service in the State as grades or cross bred. This law as enacted, while not perfect, will inform those having mares to breed of the true situation in Iowa, and this should eventually eliminate from use the grade and scrub stallion; the grade stallion has no place or use as a sire. While the grading up process may be secured by breeding a grade mare to a pure bred horse, and again breeding her foal to a pure bred horse, further progress will instantly stop if the mare is mated to a grade or scrub stallion.

We believe the present law should be amended so that the abuses now practiced in issuing stallion bills may be corrected. Many of the bills as printed, while not actually violating the law, violate the spirit of it at least.

I would recommend that authority be given the department of agriculture to publish a bulletin at least once or twice a year, giving a list of the stallions and owners to whom State certificates have been issued.

The owners of stallions all over the State are demanding that some legislation be enacted which will protect them for the service fee. Many of the states have upon their statute books a law giving the stallion owner a lien upon the colt and mare until the fee is paid. The fee generally is not due until after the colt is foaled; this being the case, many times the mare has changed hands and the stallion owner has often great difficulty in collecting his fee. I would recommend that a committee be appointed at this meeting, or at the meeting of the board, to draft a bill along these lines and see that the same is presented to the next session of the Legislature.

FARMERS' INSTITUTES.

The interest in the county farmers' institutes is constantly growing.. Eighty of the ninety-nine counties of the State held institutes and received State aid to the amount of $5,614.53 during the fiscal year ending June 30th, 1906. This was an average of $72.69 to the county, the maximum amount appropriated for each county being $75.00.

I believe that the manner of reporting should be changed so that all reports shall be filed through the office of the department of agriculture. If this change was adopted a great deal of useful information could be secured. The reports should then be compiled and published in bulletin form for free distribution. As the law now stands, the itemized expense account is filed with the county auditor, and by him with the State Auditor. The State Auditor issues a warrant and sends it to the county treasurer, who in turn delivers it to the proper institute officer. Additional reports are sent in to this office, but as the law is not mandatory in this respect, they are often not sent in at all or come in too late to be of any special benefit. The law, if changed, should read so that the reports must be filed at some date, say late in the spring, after the institutes have been held. They could then be compiled, published in bulletin form, and ready for distribution before the institute season again opened in the fall. This change would not add much, if any, work to the duties of the reporting officer, and, if anything, would facilitate his work by having the blanks all prepared and sent out by the department, the same as is now done with the county and district fair associations. The institutes are no small factor in the agricultural education of the people, and a vast amount of useful information has been imparted through them. I believe the $75.00 now allotted to each county is too small and should be increased by the next general assembly to at least $100.00.

COUNTY AND DISTRICT FAIR REPORT FOR 1906.

The county and district fair associations throughout the State were generally more successful than for a number of seasons past. Greater interest was taken in the exhibits and a larger attendance was reported. While the exact data was not received as to the attendance, the financial reports would indicate that it was over one half million.

Eighty-four fairs reported and received the State aid. One more society reported, but owing to some discrepancy in the papers the State Auditor has not yet paid the State aid. The financial report of one other society had to be sent back for correcting and has not been returned, so that only eighty-three reports are shown on the financial statement to date.

The total receipts from all sources amount to $316,565—an increase of about $60,000 over the receipts of the eighty societies reporting in 1905. The average receipts were about $3,800; $16,393 was received from the State, or an average of $197.50 for each fair. The total value of the fair grounds and improvements is shown to be $489,702, or an average of $5,950 for the eighty-three societies. The eighty-three county and district fairs paid out in premiums $58,397, or an average of $700 each; this shows only a small increase over 1905. The largest amount paid out in premiums by any one society was $1,616.50; the smallest being $281. Ten of the fairs reporting report receipts of $6,000 or over; fifty-five societies report an indebtedness of $99,707, or an average of $1,817. Sixty-three societies report money on hand to the amount of $18,017, or an average of $266. There appears to be a greater interest manifested in the county and district fairs of the State, and we predict that with ordinary circumstances the fairs will be even more successful in the next few years.

THE IOWA STATE FAIR.

I desire to again call attention to the erroneous impression held by some in regard to the Iowa State Fair. There are yet a few people who do not understand under whose auspices the State Fair is held; others deliberately wish to convey the wrong impression.

The Iowa State Fair was first held in 1854 under the auspices of the Iowa State Agricultural Society. The Iowa State Agricultural Society was afterwards organized under the statutes of Iowa and became a part of the State; the State fair continued to be held under the auspices of this society until the year 1900. By an act passed by the Twenty-eighth General Assembly there was created a new department of the State, known as the Department of Agriculture, and by this same act the Iowa State Agricultural Society was legislated out of existence. The Department of Agriculture is managed by a board which is styled the State Board of Agriculture. The personnel of the Board is as follows: Four ex-officio members, being the Governor of the State, the State Dairy and Food Commissioner, the president of the Iowa State College of Agriculture and Mechanic Arts, and the State veterinary; a president, vice president, secretary, treasurer and one member from each of the eleven congressional districts. Section 1657-d, Chapter 3, of the Code Supplement of Iowa, sets forth how and by whom the members shall be elected. Section 1657-i places the control of the State Fair grounds with the board of agriculture with requisite powers to hold annual State Fairs and exhibits of the productive resources and industries of the State. Section 1657-g makes it the duty of the executive council of the State to annually appoint a committee, consisting of three members, whose duty it is to examine and audit the books of the department and report to the Governor. In addition to an examination of the books by this committee they are annually gone over by an expert accountant regularly employed by the executive council, who examines all the various departments of the State. A full and complete statement of the receipts and disbursements is also made to the annual State agricultural convention and published in the Iowa Year Book of Agriculture as a matter of public record. An examination of these sections above referred to will bear out the statements I have made, and should set at rest all thought that the State Fair is not held under the auspices of the State.

The Iowa State Fair is a creation of the State, and as such is as justly entitled to receive State aid as any other State institution. We believe we can say without fear of contradiction that a larger percentage of the taxpayers come in more direct contact with the State Fair than with any other State institution. There are thousands upon thousands of taxpayers of the State who are just as anxious to secure a broader education and knowledge as the young man ready to enter college. He can send his children to school and to the colleges (I am speaking now of the farmer), but his only opportunity for broadening and further educating himself is through the agricultural press, the farmers' institutes and the county and district fairs, or other meetings of a similar nature, such as stock shows, horticultural meetings, etc., and by attending the Iowa State Fair, which is the university for them all.

Some of you, I have no doubt, have heard or seen criticisms upon the legislature for apropriating funds for further improving the State Fair grounds, no more, I should say, than you see or hear about any appropriation measure. I ask you, in all seriousness, if you believe this to be a just criticism. How can you expect to build up a great State institution if funds are not forthcoming for improvements? It has been said by some that it is a Des Moines institution. It is no more a Des Moines institution than the university at Iowa City is an Iowa City institution, or the Normal School at Cedar Falls in a Cedar Falls institution, or the School for the Deaf and Dumb at Council Bluffs is a Council Bluffs institution. It is true that the fair is permanently located at Des Moines, but to be successful it must of necessity be located near some city or town. It cannot be moved from town to town with any more degree of success or judgment than you would move the university from place to place each year.

In the work of improving the State Fair grounds the State has been saved thousands of dollars by the fact that the surplus or profit derived from holding the annual State Fairs has been expended for further improvements. The amount expended from this fund in the past six years has exceeded $120,000. No fund is now needed for the actual maintenance of the State Fair, the receipts for many years exceeding the disbursements by many thousand dollars but there is still great need of immediate improvements to provide proper equipment. In addition to the $120,000 which has been expended in improvements upon the grounds within the past few years, the department has been able to establish a sinking or emergency fund of $15,000. That the State has no better asset in a State institution than the Iowa State Fair is attested by the immense exhibits which are made and the great crowds of her people who annually attend. I have visited many State Fair grounds and expositions of other states, and while I can honestly say that the Iowa people have nothing to be ashamed of in their State Fair, I cannot say as much for the equipment upon the grounds. The improvements upon all the State Fair grounds I have ever visited are far superior to our own. Large sums of money have been expended the past few years in equipping the State Fair grounds in Illinois, Ohio, Michigan, Wisconsin, Minnesota, Toronto, Canada, Missouri and many other states. The Missouri State Fair was permanently located at Sedalia only five years ago, and several hundred thousand dollars have been expended in improvements since that time; the buildings are all of brick and steel construction. The equipment on the State Fair grounds of Illinois, Ohio and Toronto, Canada, are all models of excellence and are in keeping with their other State institutions. There is no use fighting the Iowa State Fair; you cannot drive it out of existence. It is as permanently established as the rock of Gibraltar and will be held annually long after the present generation has passed away. You may retard its progress to a certain extent, but it will continue to go on the future just as it has in the past, commanding greater respect as it grows older.

The Iowa State Fair is essentially a farmers' fair. A larger percentage of the attendance comes from the farmers than at any similar institution, therefore measuring up to the highest degree in its educational advantages. While the fair is not held for the benefit of the farmers alone, they appreciate it to its fullest extent. The lessons of the judging arena are studied closely by them, as are the exhibits in the farm implement and other departments. They seek every opportunity for gaining knowledge which will be of benefit in improving existing conditions; they can see the word education written in large letters all over the grounds. The State Fair has arrived at that point where it is fulfilling to a large degree the purposes for which it was established, and its effectiveness as an educational agency can be further strengthened by adding equipment which is now lacking.

STATE FAIR OF 1906.

The fifty-second annual State Fair was in keeping with the times and will go down in history as being the most successful, from every point of view, of any of its predecessors. The exhibits in nearly all departments increased amazingly, and in those departments where no increase was made the improvement in quality was noticeable. A very conservative estimate would place the number of cars of exhibits upon the fair grounds this year at between five and six hundred. To prepare for and install an exhibit of this immense proportion necessitated a vast amount of labor, and incidentally caused the expenditure of a large sum of money. The only regretable and unpleasant feature in connection with the installation of this mammoth exhibit was the lack of proper buildings for its display. The building in which an exhibit is shown and the manner of its arrangement add very materially to its attractiveness and its educational value. Elsewhere in this report, when published in the Year Book, will be found a statement showing the number of entries and exhibitors in various departments. It is enough here to say that the exhibitors were far more numerous than ever before, there being in the neighborhood of eleven hundred of them represented at this year's fair.

The attendance at the State Fair this year was, in round numbers, 188,000. This was an increase of twenty-two per cent over 1905, sixty per cent over 1904, and about one hundred and ten per cent over 1901. This annual increased attendance shows conclusively the stability of the institution, and will undoubtedly continue to grow. There is no reason why the attendance for the week should not reach 300,000, and we believe this number will be reached within a very few years, with favorable conditions.

The receipts of this year's fair were $110,929.85. This is an increase of twenty-six per cent over the receipts of 1905. While the receipts in nearly every department showed a small increase, it is most noticeable in the sale of tickets and the amount received from the sale of privileges. The increased percentage from the sale of privileges is about the same proportion as the percentage of increased attendance.

The total expense of the fair this year, including all premiums paid, etc., was $72,459,39, showing a net profit of $38,470.46. There were other expenses incidental to the work of the department amounting to $2,946.02, and improvements made at the fair grounds to the amount of $30,035.33. This makes a total of $105,440.74 of warrants issued during the fiscal year. Elsewhere in this report will be given a complete statement of the finances of the department for the year; also a comparative statement with preceding years.

In speaking of the exhibits, they can with propriety be arranged into four classifications and departments as follows:

First—Live stock department, including poultry.

Second—Agriculture, horticulture, floriculture and dairy.

Third—Farm implements and machinery of all kinds, wagons, buggies, etc.

Fourth—Women's department, which includes all art, fancy work, merchandise, novelties, etc.

In the live stock department as a whole the Iowa State Fair sets the pace by which all similar shows are compared. In the swine department this year, 2,872 hogs were on exhibition. We believe this, with but one exception, is from two to five hundred per cent larger than is shown at any other fair. In the number and quality of breeding cattle the Iowa State Fair is still in the lead. The exhibit of horses this year was much larger than ever before. There seems to be renewed interest in the breeding of horses and we predict that the show at the fair of 1907 will set a pace that will be hard to follow. While Iowa is not noted as a sheep raising state, the show in this department is very good. With the added classification for Iowa exhibitors more sheep from this State are being shown annually.

Never has such a display of agricultural, horticultural and dairy products been made at the Iowa State Fair. The exhibits in these departments tell in plainer language than can be spoken why Iowa is a prosperous and wealthy state. The soil map of Iowa shown by the Ames Experiment Station was a very interesting exhibit.

In farm implements, machinery, wagons, etc., the show could hardly have been more complete. In going through this department—it covered about thirty-five to forty acres—it seemed that every farm implement or device known to man was on exhibition.

The exhibit in the women's and art department was fully up to the standard, and the interior of the woman's building looked like the interior of a large department store.

To give a better conception of the immensity of the show, will say there were in the neighborhood of five and six hundred cars of exhibits on the grounds; equal to fifteen trains of forty cars each, or twenty trains of thirty cars each, or thirty trains of twenty cars each.

In keeping with the spirit of the times, and in their effort to leave no stone unturned to make the fair a success, the Board provided numerous amusements, all of a high class. Including the evening entertainment, $13,863 was expended for amusements this year. The increased receipts and net profit would indicate that the management has made no mistake in following the policy of providing good, clean amusements. This policy is being carried out by all of the leading fairs of America.

IMPROVEMENTS.

Thousands of dollars were paid out for improvements on the grounds the last season. While no appropriation was made by the Thirty-first General Assembly for buildings, the Board went ahead and made improvements with what available funds were on hand. The policy of erecting nothing but permanent brick and fireproof buildings has been adopted in so far as possible. This we believe to be an excellent idea, and if adhered to will in time give the State an excellent equipment at the State Fair grounds. In keeping with this policy a large, fire-proof brick restaurant building was erected at an expense of a little less than $10,000. This building is divided into four apartments, each apartment having a large dining room 30x80, with a kitchen 20x30, and a cellar of the same size under the kitchen. The building is equipped with a steam boiler which furnishes all the steam necessary for steam cooking, hot water, etc. A brick cattle barn with metal roof, 60x20, was buil at an expense of about $4,700; $200 additional was added to this item in the financial statement, being the amount expended in removing the old barns and fitting them up so that they might be used for a few years more; $2,500 was used to install show cases in the exposition building, $1,700 for painting and $700 for a refrigerator and fixtures in the dairy building. Additional fencing was built at an expense of about $800, and landscaping to the amount of $345.00 was added. About $600 was expended for increasing the lighting facilities in the camping grounds; $1,000 was used in building and refitting barns to accommodate the large horse exhibit, and about $1,445 in rearranging and adding to the swine barns in order that the greatest number of pens possible could be provided for the swine show; $1,200 was expended in the amphitheater in repairing floors and putting in reserved seats. These seats can be taken out and used in the new amphitheater when built. About $2,900 was spent in miscellaneous improvements and repairs, bringing the total amount put into improvements and repairs on the State Fair grounds for the season of 1906 up to $30,035.

NEW IMPROVEMENTS.

As shown elsewhere in this report, the amount available out of the money on hand for the expenses of the department, preliminary expenses of the State Fair of 1907, and improvements for the next year will be about $35,000. Out of this amount it will require from $20,000 to $25,000 to put in the water supply system, two or more additional closets and increase the lighting facilities. The fair ground property has never had any fire protection, only such as could be had with chemical fire extinguishers. Further than this the Board has had to face an inadequate water supply during the fair week. Arrangements have now been made with the Des Moines Water-Works Company whereby the company is to extend their water mains out to Thirtieth street, where the State can make a connection for the water distribution system inside the grounds.

An engineer was employed to go over the grounds and prepare plans and specifications for installing the water supply system. Bids were asked and opened at a meeting of the executive committee on the 26th of November. These bids have been tabulated and will be presented to the Board at their next meeting. While no award has been made, the bids received indicate that the expense will be between $10,000 and $11,000. This will include about 25 fire hydrants. The great necessity for increased sanitary closet and lighting facilities is apparent. They are an absolute necessity for the comfort and safety of the public and exhibits, and should by all means be provided before another State Fair is held.

It has been the desire of the Board to secure an additional piece of ground lying just south of the stock departments and adjacent to the Rock Island unloading platforms. This piece of ground is very badly needed for the swine and sheep barns, in addition to the fact that by extending the grounds to the south the south entrance would be just across the street from the Rock Island suburban station. Since the swine exhibit has been increasing so amazingly it has not been as much of a question how to provide pens as to where they could be placed. During the last fair the tents were so numerous and so close together as to shut off any possibility of getting to the pumping station with coal.

As the Board or the State had no funds available to purchase this ground, it was thought advisable to sell about thirty-nine acres belonging to the State lying on the extreme east of the present fair grounds and with the proceeds purchase the other piece. This the executive council had authority to do, granted them by an act of the Twenty-sixth General Assembly. To make it clear to you just where this thirty-nine acres lays, will say that the State owns 266 acres of land which was purchased by an act of Legislature when the fair was permanently located at Des Moines. Of this total acreage only about 186 acres is fenced in the fair grounds proper. This thirty-nine acres lays about three-quarters of a mile east of the exposition building, and is not now, nor never has been a part of the camp grounds. There is fully sixty acres of land lying between the present ground used for camping purposes and the thirty-nine acres. I made this statement to show that the Board had no intention of crippling the camping feature of the fair. The Board was unanimous in their opinion that the tract of land south of the grounds would be of far greater service and value to the State for fair ground purposes than the thirty-nine acres which the State now owns, for, as mentioned before, this piece of ground never has been, and there is not much possibility of its ever being, of any use for State Fair purposes. Some objection was offered to the selling of any land now belonging to the State. The matter was taken up by a committee of prominent citizens, who, rather than see any of the land sold, raised the money and purchased outright the piece of ground to the south of the fair grounds, trusting to the coming General Assembly to reimburse them for the purchase price. This action of the committee met with the approval of the Board and the executive council. It was very essential that it be secured without further delay, so that plans for the rearrangement of the stock department could go on.

I will not attempt to say what recommendations will be made by the Board to the Thirty-second General Assembly for further improvements at the fair grounds; but one thing is certain. If Iowa is to keep up with the procession and maintain the proud position she now occupies as one of the leading State Fairs and Stock Shows of America, she must wake up and not be niggardly in providing funds for equipment upon the State Fair grounds in keeping with the exhibits.

Relative to the finances of the department for the fiscal year, ending December 1st, I have prepared the following statement:

STATEMENT OF MONEYS RECEIVED BY THE SECRETARY AND DEPOSITED WITH TREASURER.

From entry fees, speed department	$ 3,566.50
From sale of exhibitors' tickets	2,136.00
From state appropriation (for insurance and improvements)	1,000.00
From forage	2,198.75
From stallion certificates	1,845.00
From interest	1,011.00
From amusements	699.25
From special premiums, American Hereford Breeders' Association, $495.00; American Short Horn Breeders' Association, $990.00	1,485.00
From advertising	200.00
From C. E. Cameron, superintendent of speed department	4.00
From miscellaneous sources	241.64
Total	$ 14,387.14

STATEMENT OF EXPENSE WARRANTS ISSUED DURING THE FISCAL YEAR ENDING NOVEMBER 30, 1906.

For improvements and repairs:	
Agricultural building	$ 780.52
Streets	168.87
Fence	784.58
Dining halls, new building	9,838.50
Exposition building	2,567.87
Landscaping	341.11
Women's building	72.00
Amphitheater	1,237.02
Curbing	135.43
Painting	1,701.89
Walks	61.65
Barns	1,003.79
Turnstiles	225.40
Swine pens	1,435.02
Cattle barn (brick)	4,874.85
Lighting	604.40
Fire station	719.95
Sewerage	117.45
Telephone exchange	200.45

Miscellaneous improvement account:			
Payrolls for labor	$ 1,292.45		
Lumber, etc.	595.52		
Repairs on turnstiles	3.75		
Spraying machine	15.25		
Glass	.87		
Surveying	6.00		
Garbage cans	177.00		
Hardware	382.52		
Band stand	108.54		
Cement	19.46		
Furniture	11.20		
Wire work	24.38		
Plumbing	56.56		
Lime	6.08		
Sprinkler	200.00		
Gravel roof	25.00		
Settees	240.00	3,164.58	$ 30,035.33
Committee on adulteration of foods			60.80
1905 bills paid in 1906			217.02
Insurance			383.76
Board meetings			718.15
State farmers' institute			267.87
Clerical work			523.00
Superintendent of fair grounds			900.00
Books			153.75
Grain, grass seed, etc			69.80
Cuts for year book			4.90
Papers			19.00
Horse breeding division expenses			3.50
Surveying			52.00
Institute work			12.32
Expense of fair of 1906:			
Auditing committee		$ 70.90	
Executive committee		738.55	
Special committee work		900.69	
Express, telegraph and telephone		306.86	
Printing and advertising		6,259.15	
Postage		576.00	
Attractions, music, etc.		13,863.54	
Forage		2,232.18	
Clerical work, secretary's office		915.63	
Premiums paid by expense warrants		293.50	
Collected and paid to American Trotting Association		176.15	
Privilege department		491.47	
Electric light and power department		668.40	
Grounds department		237.01	
Police regulations department		1,790.75	
President's department		104.20	
Treasurer's department		833.80	
Gate department		1,440.43	
Ticket department		294.55	
Horse department		541.80	
Speed department		345.10	
Cattle department		652.11	
Swine department		436.22	
Sheep and poultry department		316.55	
Machinery department		268.65	
Agricultural department		437.25	
Dairy department		294.60	
Horticultural department		202.65	
Women's department		544.85	

Miscellaneous expense of fair of 1906:

Pay rolls, preparing grounds and buildings and cleaning up after the fair	$ 2,157.93		
Supplies for fair grounds	204.06		
Scavenger work	50.00		
Freight and drayage	63.08		
Team work	376.85		
Exhibits	47.81		
Sawdust, etc.	52.85		
Ice and water	57.50		
Decorations	447.82		
Coal	21.26		
Rental tents and side walls	308.68		
Office supplies	61.87		
Matron at women's building	24.35		
Dues American Trotting Association	75.00		
Judging contest	35.40		
Refund on tickets	8.00		
Photographs	89.50	4,081.96	$ 40,315.60
Total warrants issued			$ 73,736.80

STATEMENT OF PREMIUM WARRANTS ISSUED IN PAYMENT OF AWARDS AT STATE FAIR OF 1906, AND MATURE CORN SHOW OF 1905.

Horse department	$ 3,672.00
Cattle department	8,133.00
Swine department	2,525.00
Sheep department	1,456.00
Poultry department	904.00
Grains, etc.	2,182.50
Pantry, etc.	710.00
Dairy department	620.74
Fruit department	739.50
Plants and flowers	874.20
Fine arts, etc.	2,276.50
Scholarship contest	200.00
Speed department	7,212.50
Total premiums paid at fair of 1906	$ 31,505.94
Premiums paid on mature corn, December meeting, 1905	198.00
Total premiums paid, November 30, 1905, to November 30, 1906	$ 31,703.94

SECRETARY'S ACCOUNT WITH G. D. ELLYSON, TREASURER, FOR THE FISCAL YEAR ENDING NOVEMBER 30, 1906.

Receipts:

By cash balance December 1, 1905	$ 39,976.34
From sale of tickets	79,042.50
From deposits by the secretary	14,387.14
From deposits by the superintendent of fair grounds	719.80
From deposits by the superintendent of fair grounds (for light and power)	245.15
From deposits by the superintendent of privilege department	13,892.10
From deposits by the superintendent of swine department	1,422.00
From deposits by the superintendent of horse department	973.00
From deposits by the superintendent of cattle department	771.00
From deposits by the superintendent of the sheep and poultry department	266.50

From deposits by the superintendent of exposition building			1,968.50
From deposits by the superintendent of implement and machinery department			1,047.85
From deposits by the superintendent of dairy department			880.11
From deposits by the superintendent of agricultural department			31.86
Disbursements:			
To expense warrants paid:			
Issue of 1905	$ 31.90		
Issue of 1906	73,622.12	$ 73,654.02	
To premium warrants paid:			
Issue of 1905	$ 154.02		
Issue of 1906	31,520.44	$ 31,674.46	
To cash balance November 30, 1906:			
In reserve fund	$ 15,000.00		
In regular fund	35,294.87	$ 50,294.87	
		$155,623.35	$155,623.35

STATEMENT OF RECEIPTS AND DISBURSEMENTS, IOWA STATE FAIR, 1906.

Receipts:		
From sale of tickets		$ 79,042.50
From entry fees, speed department		3,566.50
From sale of forage		2,198.75
From sale of exhibitors' tickets		2,136.00
From sale of amusement tickets		699.25
From special premiums		1,485.00
From miscellaneous collections by secretary		131.64
From advertising		200.00
From stall rent, speed department		4.00
From sale of light and power		245.15
From sale of concessions		13,892.10
From rent of cattle and horse stalls		1,744.00
From rent of sheep and swine pens and poultry coops		1,688.50
From space in buildings		3,896.46
Disbursements:		
To premiums paid	$ 31,703.94	
To board meeting and committee meetings	2,149.99	
To attractions	13,863.54	
To printing and advertising	6,259.15	
To postage	576.00	
To expenses police regulations	1,790.75	
To expenses ticket sellers	833.80	
To expenses ticket takers	1,440.43	
To expenses forage	2,232.18	
To expenses various departments	7,523.75	
To miscellaneous expense for labor at fair grounds, scavenger work, decorations, etc.	4,081.96	
Total disbursements	$ 72,459.39	
To net profit 1906 Iowa state fair	38,470.46	
	$110,929.85	$110,929.85

PROFIT AND LOSS ACCOUNT.

		Dr.	Cr.
To total amount of warrants issued 1906:			
Expense warrants	$ 73,736.80		
Premium warrants	31,703.94	$105,440.74	
To warrants of previous years outstanding December 1, 1905		185.92	
To total amount of receipts from December 1, 1905, to November 30, 1906			$115,596.01
To cash balance November 30, 1905			39,976.34
To balance profit and loss account November 30, 1906		49,945.69	
		$155,572.35	$155,572.35

STATEMENT OF UNPAID WARRANTS.

Expense warrants:	
Issue of 1906	$ 114.68
Premium warrants:	
Issue of 1906	183.50
Total amount of unpaid warrants December 1, 1906	$ 298.18

TREASURER'S REPORT.

For Fiscal Year Ending Nov. 30, 1906.

Des Moines, Iowa, Dec. 1, 1906.

To the Board of Directors of the Iowa State Board of Agriculture.

Gentlemen: Herewith please find the report of your treasurer for the year 1906:

Receipts:

Cash on hand	$ 39,976.34
Gate receipts	63,072.50
Amphitheater receipts	5,601.25
Quarterstretch receipts	1,981.50
Evening receipts	692.50
Evening amphitheater receipts	4,479.00
Reserved seat receipts	1,545.75
Campers	1,670.00
Superintendent of privileges	13,892.10
Superintendent of horticulture and agriculture	31.36
Superintendent of swine	1,422.00
Superintendent of sheep and poultry	266.50
Superintendent of horses	973.00
Superintendent of fine arts	1,968.50
Superintendent of dairy	880.11
Superintendent of grounds	719.80
Superintendent of electric light	245.15
Superintendent of cattle	771.00
Superintendent of machinery	1,047.85
Secretary	14,387.14

Disbursements:

Expense warrants	$ 73,654.02	
Premium warrants	31,674.46	
Balance on hand December 1, 1906	50,294.87	
	$155,623.35	$155,623.35

Respectfully submitted,

(Signed) G. D. ELLYSON,
Treasurer.

This is to certify that G. D. Ellyson had on deposit as treasurer of the State Board of Agriculture at the close of business Dec. 1, 1906, subject to draft, the sum of fifty thousand two hundred ninety-four dollars and eighty-seven cents ($50,294.87). MARQUARDT SAVINGS BANK.

(Signed) D. F. WITTER,
Vice President.

REPORT OF SPECIAL FINANCE COMMITTEE, APPOINTED BY THE EXECUTIVE COUNCIL, ON FINANCIAL BUSINESS OF THE DEPARTMENT OF AGRICULTURE FOR THE YEAR 1906.

To His Excellency, Hon. Albert B. Cummins, Governor:

In compliance with the instructions of the executive council we as a committee duly appointed to examine the books of the Department of Agriculture for the year 1906, as provided by Section 1657-Q, Supplement to the Code of 1897, beg leave to report that we have examined the accounts of the sources from which the money received came into its treasury and the vouchers and warrants of its expenditures, a detailed account of the same being attached and made a part of this report. (Duplicate of secretary's and treasurer's financial reports.) Your committee find that no warrants have been drawn except on duly authenticated vouchers, which are on file, duly numbered with warrant number. We also commend the secretary of this department for the efficiency of the system of bookkeeping in vogue in his office, and the accuracy of his accounts with the treasurer of said department.

(Signed).
A. H. GRISELL,
J. A. PETERS,
J. G. HEMPEL,
Committee.

STATISTICAL INFORMATION OF FINANCE OF FORMER STATE FAIRS IN COMPARISION WITH THE ONE HELD IN 1906.

MONEY EXPENDED FOR IMPROVEMENTS UPON THE STATE FAIR GROUNDS IN THE PAST SEVEN YEARS.

From special appropriations by the legislature:		
In the year 1902, for stock pavilion	$ 37,000.00	
In the year 1904, for agricultural building	47,000.00	$ 84,000.00
From receipts of the state fair:		
In the year 1900	$ 8,115.59	
In the year 1901	13,378.73	
In the year 1902	26,457.12	
In the year 1903	17,855.77	
In the year 1904	12,641.11	
In the year 1905	11,963.09	
In the year 1906	30,035.33	
	$120,476.74	$120,476.74
		$204,446.74
Reserve or emergency fund created within the past five years	15,000.00	15,000.00
	$135,476.74	$219,446.74

STATEMENT OF AMOUNTS PAID FOR PREMIUMS IN 1906, 1905, 1901 AND 1896.

	1906.	1905.	1901.	1896.
Horses	$ 3,672.00	$ 2,941.00	$ 1,548.90	$ 1,133.1
Cattle	8,133.00	7,274.00	4,786.80	2,285.10
Swine	2,525.00	2,179.00	1,133.10	952.20
Poultry	904.00	731.50	569.25	917.55
Sheep	1,456.00	1,496.00	867.60	
All other premiums	7,801.44	6,790.39	5,548.19	5,533.91
Speed	7,212.50	7,145.00	4,750.00	5,372.93
Totals	$31,703.94	$28,556.89	$19,203.84	$16,194.79

Increase 1906 over one year ago	$ 3,147.05
Increase 1906 over five years ago	12,500.10
Increase 1906 over ten years ago	15,509.15

NSED FINANCIAL STATEMENT OF THE IOWA STATE DEPARTMENT

owing Receipts and Disbursements of Iowa State Fair and Other Sources and
Profit of Fair for each

Year	Receipts						
	Cash balance beginning of year	In reserve fund	From state fair	From state appropriation	From other sources	Total receipts for year	Grand total
....	$ 116.79	....	$ 36,622.10	$ 7,000.00	$ 6,710.22	$ 50,332.32	$ 50,449.11
....	28,616.55	....	50,712.91	1,000.00	2,753.82	54,466.73	83,083.28
....	34,244.93	$12,000.00	63,084.71	38,000.00	3,037.06	104,121.77	138,366.70
....	30,372.25	15,000.00	59,838.56	1,000.00	3,140.79	63,979.35	94,351.60
....	28,963.11	15,000.00	66,100.36	48,000.00	2,622.03	116,722.39	145,685.50
....	29,657.23	15,000.00	84,786.25	1,000.00	2,840.92	88,627.17	118,284.40
....	39,976.34	15,000.00	110,929.85	1,000.00	3,717.16	115,647.01	153,623.35
for past six years........	....	....	$ 435,452.64	$ 90,000.00	$ 18,111.78	$ 543,564.42	....

F AGRICULTURE FOR YEARS OF 1896, 1901, 1902, 1903, 1904, 1905 ANI
xpenditures, together with Amount Expended for Improvements, Repairs, etc., and r
the years named.

Disbursements								Profits of Fa	
Premiums paid	Other fair expenses	Improve- ments and repairs	Disburse- ments other than for fair	Total for year	Cash on hand	Previous year's busi- ness or outstanding warrants	Grand total	Total re- ceipts of fair	Total expen- ses of fair
6,404.29	$ 15,351.06	$ 7,471.95	$*14,019.88	$ 53,247.28	$ 152.84	....	$ 53,400.12	$ 36,622.10	$ 31,807.3
9,203.83	13,925.87	13,378.73	2,313.44	48,821.87	34,244.93	$ 16.48	83,083.28	50,712.91	33,129.7
1,736.31	20,073.34	63,457.12	2,608.69	107,875.46	30,372.25	118.99	138,366.70	63,084.71	41,809.6
3,813.13	21,989.56	17,855.77	1,704.83	65,363.29	28,963.11	25.20	94,351.60	59,838,56	45,802.6
4,691.68	28,485.42	59,641.11	3,195.43	116,013.64	29,657.23	14.63	145,685.50	66,100.36	53,177.1
8,730.89	34,408.62	11,963.09	3,345.27	78,447.87	39,976.34	139.81	118,284.40	84,786.25	63,139.5
1,703.94	40,315.60	30,035.33	3,385.87	105,440.74	50,294.87	112.26	155,623.35	110,929.85	72,459.3
9,879.78	$159,198.41	$196,331.15	$ 16,503.53	$521,962.87	....	....	....	$435,452.64	$ 309,518.0

*Overdraft of 1895 for $2,798.17.

PASTURE SCENE—MARSHALL COUNTY

Courtesy Hon. W. P. Arney

PART II.

Report of the Iowa Weather and Crop Service for 1906.

John R. Sage, Director.

CLIMATOLOGY OF THE YEAR 1906.

BAROMETER.—The mean pressure of the atmosphere for the year 1906 was 30.05 inches. The highest observed pressure was 30.79 inches on February 5th at Dubuque. The lowest pressure was 28.71 inches on January 3d at Dubuque. The range for the State was 2.08 inches.

TEMPERATURE.—The mean temperature for the State was 48.7°, which is 1° above the normal. The highest temperature reported was 102° on July 21st, at Atlantic. The lowest temperature reported was 32° below zero on February 10th, at Inwood, Lyon county. The range for the year was 134°.

PRECIPITATION.—The average amount of rain and melted snow for the year, as shown by complete records of 107 stations, was 31.23 inches, which is .49 of an inch below the normal, and 5.28 inches below the average amount in 1905. The greatest amount recorded at any station for the year was 44.34 inches at Ridgeway, Winneshiek county. The least amount recorded was 20.63 inches at Elliott, Montgomery county. The greatest monthly rainfall was 11.10 inches at Thurman in September. The least monthly precipitation was 0.20 of an inch at Baxter and Sibley in February. The greatest amount in any twenty-four consecutive hours was 7.60 inches at Thurman on September 16th and 17th. The average number of days on which .01 of an inch or more of rain fell was ninety-two.

WIND AND WEATHER.—The prevailing direction of wind was northwest. The highest velocity reported was fifty-eight miles per hour in Sioux City, from the northwest on March 21st. The average daily movement of wind was 205 miles. There were 163 clear days; 97 partly cloudy, and 105 cloudy days; as against 164 clear days, 98 partly cloudy and 103 cloudy days in 1905.

MONTHLY SUMMARIES.

JANUARY.—The monthly mean temperature for the State, as shown by the records of 125 stations,, was 24.6°, which is 4.8° above the normal. By sections the mean temperatures were as follows: Northern section, 22.7°, which is 5.1° above normal; Central section, 25.2°, which is 6.0° above normal; Southern section, 25.9°, which is 3.4° above normal. The highest monthly mean temperature reported was 31.8° at Red Oak. The lowest mean reported was 19.4° at Charles City. The highest temperature reported for the month was 69° at Keokuk, on the 20th. The lowest temperature reported was 19° below zero, at Charles City, on the 8th. The average of monthly maximum temperatures for all reporting stations was 53.2°. The average of the minimum temperature was —9.3°. The greatest daily range of temperature was 49° at Sibley. The average of greatest daily ranges was 36.8°. The average precipitation (rain and melted snow) for the State, as shown by records of 132 stations, was 1.52 inches, which is 0.57 of an inch above the normal for January in Iowa. By sections the averages were as follows: Northern section, 1.20 inches, which is 0.44 of an inch above normal; Central section, 1.79 inches, which is 0.75 of an inch above normal; Southern section, 1.57 inches, which is 0.52 of an inch above normal. The largest amount reported was 4.71 inches at Ridgeway. The least amount reported was 0.28 of an inch at Inwood. The greatest daily precipitation reported was 3.87 inches at Ridgeway on the 3d. The average number of days on which .01 of an inch, or more, precipitation was recorded was 5. The prevailing direction of the wind for the month was northwest. The highest velocity reported was 50 miles per hour, from the southwest, at Keokuk, on the 3d. The average number of clear days was 14; the average of partly cloudy days was 6, and of cloudy days 11.

FEBRUARY.—This has been the warmest February since 1898. The mean temperature for the State as shown by the records of 125 stations, was 23.6°, which is 4.2° above normal. By sections the mean temperatures were as follows: Northern section, 20.2°; Central section, 23.5°; Southern section, 27.2°. The highest monthly mean was 31.6° at Red Oak, and the lowest was 17.3° at Charles City. The highest temperature reported was 66° at Red Oak on the 22d, and the lowest was 32° at Inwood, on the 10th. The average of monthly maximum temperatures was 56.4°, and the average of minimum temperatures was —13.1°. The greatest daily range was 59° at Sibley, and the average of greatest daily ranges was 38°. The average precipitation for the State, as shown by records of 132 stations, was 1.29 inches, which is 0.28 of an inch above the normal for February. By sections the averages were as follows: Northern section, 1.01 inches; Central section, 1.23 inches; Southern section, 1.62 inches. The largest amount reported was 2.91 inches at Mount Pleasant, and the least reported was 0.20 of an inch at Baxter and Sibley. The greatest daily percipitation was 1.48 inches at Webster City, on the 13th. The average number of days on which .01 of an inch or more precipitation was reported was 5. The prevailing direction of wind was south.

The highest velocity reported was 50 miles per hour, from the northwest, at Sioux City, on the 3d. The average number of clear days was 14; partly cloudy, 7; and cloudy, 7 days.

MARCH.—The monthly mean temperature for the State, as shown by the records of 123 stations, was 27.1°, which is 5.7° below normal. The mean temperatures by sections were as follows: Northern section, 25.3°; Central section, 27.6°; Southern section, 28.4°. The highest monthly mean was 30.7°, at Red Oak, and the lowest monthly mean was 22.8°, at Sibley. The highest temperature reported was 65° at Pacific Junction on the 1st, and the lowest reported was 14° below zero at Thurman on the 17th. The greatest daily range was 42° at Bedford and Thurman. The average of greatest daily ranges was 32.1°. The average precipitation for the State, as shown by the records of 129 stations, was 2.34 inches, which is 0.46 of an inch above normal. The averages by sections were as follows. Northern section, 2.56 inches; Central section, 2.14 inches; Southern section, 2.31 inches. The largest amount reported was 4.55 inches at Burlington; and the least amount reported was 0.58 of an inch at Ames. The greatest daily rainfall reported was 2.55 inches at Denison on the 3d. The average number of days on which .01 of an inch or more was reported was 10. The prevailing direction of the wind was northwest. The highest wind velocity reported was 58 miles an hour from the northwest, at Sioux City, on the 21st. The average number of clear days was 7; partly cloudy 7; cloudy days, 16.

APRIL.—The monthly mean temperature for the State, as shown by the records of 121 stations, was 52.5°, which is 3.1° above normal. By sections the mean temperatures were as follows: Northern section, 50.5°; Central section, 52.5°; Southern section, 54.4°. The highest temperature reported was 94° at Ida Grove and Onawa on the 24th. The lowest temperature reported was 22° at Clinton and Webster City on the 1st and at Odebolt on the 6th. The average monthly maximum temperature was 85.4°, and the average monthly minimum was 26.3°. The greatest daily range was 51° at Denison and the average of greatest daily ranges was 42.4°. The average precipitation for the State, as shown by records of 128 stations, was 2.42 inches, which is 0.46 of an inch below the April normal. The averages by sections were as follows: Northern section, 2.06 inches; Central section, 2.43 inches; Southern section, 2.76 inches. The largest amount reported was 5.55 inches at Glenwood, and the least amount reported was .53 of an inch at Independence. The greatest daily rainfall reported was 2.75 inches at Sheldon on the 13th. The average number of days on which .01 of an inch or more was reported was 8. The prevailing direction of the wind was southeast. The highest velocity reported was 42 miles an hour from the west at Sioux City, on the 25th. The average number of clear days was 14; partly cloudy, 9; cloudy days, 7.

MAY.—The monthly mean temperature for the State, as shown by the records of 122 stations, was 60.8°, which is 0.1° above the normal for May. By sections the mean temperatures were as follows: Northern section, 58.8°, which is 0.5° below the normal; Central section, 61.1°, which is 0.6° above the normal; Southern section, 62.6, which is 0.6° above the normal. The highest monthly mean was 65.5°, at Keokuk. The lowest monthly mean was 57.4°, at Hanlontown. The highest temperature reported was 95°, at Odebolt, on the 11th. The lowest temperature reported was 24°, at Estherville, Britt and Iowa Falls, on the 7th. The average monthly maximum temperature was 87°, and the average monthly minimum was 28.9°. The greatest daily range was 52° at Preston, and the average of greatest daily ranges was 39.8°. The average precipitation for the State, as shown by records of 129 statinos, was 3.54 inches, which is 0.70 of an inch below the normal for May. The averages by sections were as follows: Northern section, 5.38 inches, which is 1.40 above normal; Central section, 3.15 inches, which is 1.09 below the normal; Southern section, 2.09 inches, which is 2.42 inches below the normal. The largest amount reported was 10.72 inches at Hanlontown. The least amount reported was 0.89 of an inch at Elliott. The greatest daily rainfall reported was 4.24 inches at Northwood on the 14th. The average number of days on which .01 of an inch or more was reported was 11. The prevailing direction of wind was southwest, and the highest velocity reported was 48 miles an hour, from the west, at Sioux City, on the 17th. The average number of clear days was 13, partly cloudy 10, and cloudy 8.

June.—June was slightly cooler than the average, the mean temperature for the State as shown by the records of 125 stations being 67.9°, which is 1.7° below the normal. By sections the mean temperatures were as follows: Northern section, 66.2°, which is 2.0° below the normal; Central section, 68.1°, which is 1.4° below the normal; Southern section, 69.4°, which is 1.8° below the normal. The highest monthly mean was 71.7° at Pella, and the lowest was 64° at Sibley. The highest temperature reported was 99° at Greenfield and Odebolt on the 16th and at Clarinda on the 16th and 17th. The lowest temperature reported was 37° at Atlantic and Earlham on the 13th. The average monthly maximum was 93.1° and the average monthly minimum was 43.4°. The greatest daily range of temperature was 48° at Audubon, Bedford and Ida Grove. The average of greatest daily ranges was 36.4°. The average precipitation for the State, as shown by records at 132 stations, was 3.92 inches, which is 0.63 of an inch below the normal. By sections the averages were as follows: Northern section, 3.81 inches, which is 0.63 of an inch below normal; Central section, 3.44 inches, which is 1.16 inches below normal; Southern section, 4.50 inches, which is 0.12 of an inch above the normal. The largest amount reported was 8.27 inches at Albia, and the least amount reported was 1.48 inches at Keokuk. The greatest daily rainfall reported was 5.20 inches at Thurman, on the 18th. The average number of days on which .01 of an inch or more was reported was 8. The prevailing direction of the wind was northwest. The highest velocity reported was 49 miles an hour, from the west, at Sioux City, on the 6th. The average number of clear days was 15; partly cloudy 10, and cloudy 5.

July.—The monthly mean temperature of July for the State as shown by the records of 122 stations, was 70.9°, which is 3.5° below the normal. By sections the mean temperatures were as follows: Northern section, 69.7°, which is 3.5° below the normal; Central section, 71.0°, which is 3.3° below the normal; Southern section, 71.9°, which is 3.8° below the normal. The highest monthly mean was 75.8°, at Tipton; and the lowest monthly mean was 67.1°, at Sibley. The highest temperature reported was 102° at Atlantic, on the 21st; and the lowest reported was 42° at Washta, on the 7th and 8th. The greatest daily range of temperature was 46° at Washta, and the average of greatest daily ranges was 34.6°. The average of monthly maximums was 93.6°, and the average of monthly minimums was 48.8°. The average precipitation for the State, as shown by the records of 131 stations, was 3.04 inches, which is 1.31 inches below the normal. The averages by sections were as follows: Northern section, 3.04 inches, which is 1.17 inches below the normal; Central section, 3.09 inches, which is 1.14 inches below the normal; Southern section, 3.00 inches, which is 1.62 inches below the normal. The largest amount reported was 7.05 inches at Independence, the least amount reported was 0.28 of an inch at Tipton. The greatest daily rainfall reported was 2.82 inches at Little Sioux, on the 25th. The average number of days on which .01 of an inch or more was reported was 8. The prevailing direction of the wind was northwest. The highest velocity reported was 36 miles an hour from the northwest, at Keokuk, on the 22d. The average number of clear days was 18; partly cloudy days, 10; and cloudy days, 3.

August.—The monthly mean temperature for the State, as shown by the records of 116 stations, was 74.1°, which is 2.1° above the normal. By sections the mean temperatures were as follows: Northern section, 72.6°, which is 1.9° above the normal; Central section, 74.2°, which is 2.6° above the normal; Southern section, 75.4°, which is 1.8° above the normal. The highest monthly mean was 77.4°, at Ottumwa; and the lowest monthly mean was 70.9° at Estherville. The highest temperature reported was 101° at Odebolt, on the 16th. The lowest temperature reported was 33° at Washta, on the 27th. The average monthly maximum was 95°, and the average monthly minimum was 43.6°. The greatest daily range was .47° at Washta. The average of greatest daily range was 34.2°. The average amount of precipitation for the State, as shown by records of 125 stations, was 3.95 inches, which is .38 of an inch above the normal. The averages by sections were as follows: Northern section, 5.14 inches, which is 2.04 inches above the normal; Central section, 3.98 inches, which is 0.26 of an inch above the normal; Southern section, 2.74 inches, which is 1.16 inches below the normal. The largest amount reported was 10.51 inches at Sibley, Osceola county, and the lowest amount reported was 0.92 of an inch at Allerton, Wayne county. The greatest daily rainfall reported was 4.00 inches at Olin on the 6th. The average number of days on which .01 of an inch or more of rainfall was reported was 9. The prevailing direction of the wind for the State was southwest. The highest velocity of wind reported was 32 miles per hour, at Sioux City, on the 1st. The average number of clear days observed at all stations was 17; of partly cloudy days there was an average of 9, and cloudy days 5.

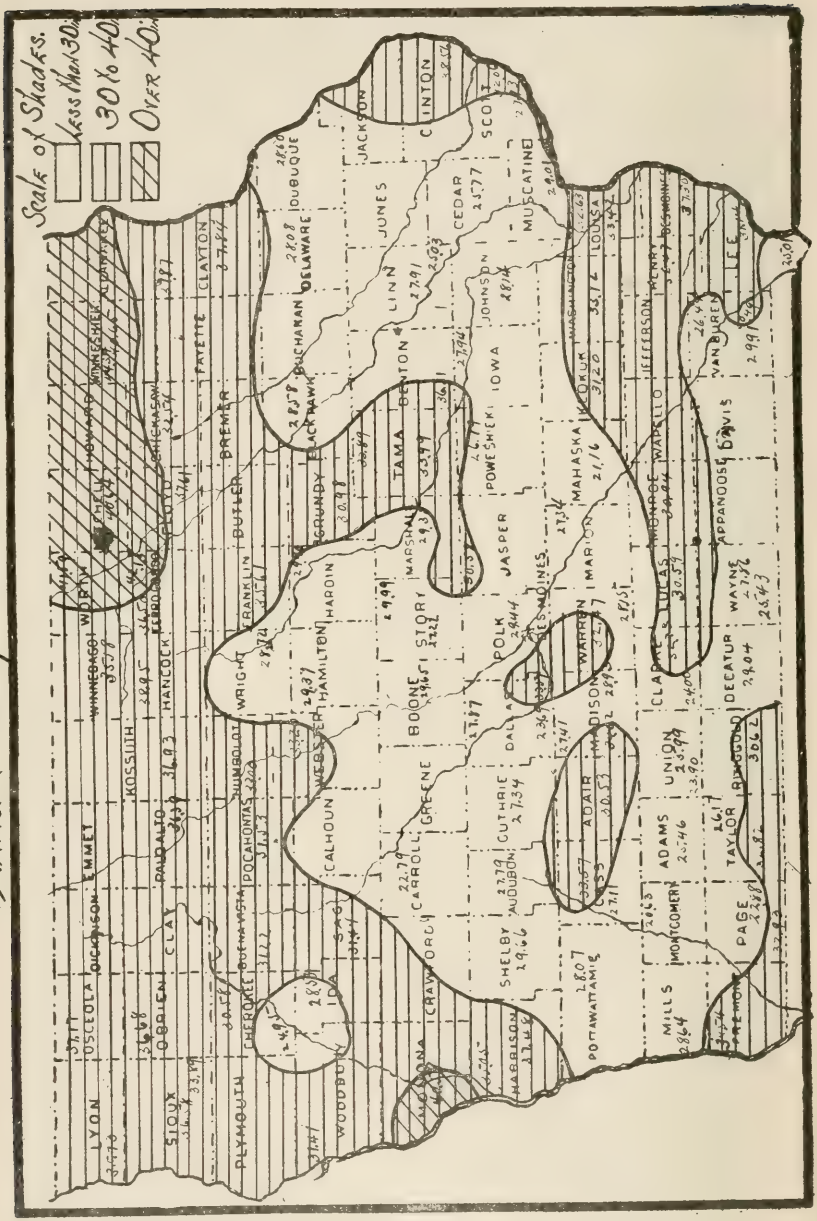
September.—The monthly mean temperature for the State as shown by the records of 111 stations was 67.2°, which is 3.4° above the normal. By sections the mean temperatures were as follows: Northern section, 65.3°, which is 3.0° above the normal; Central section, 67.3°, which is 4.0° above the normal; Southern section, 68.9°, which is 3.1° above the normal. The highest monthly mean was 71.9° at Ottumwa, and the lowest monthly mean was 62.8° at Sibley. The highest temperature reported was 100° at Clarinda, on the 9th; and the lowest reported was 27° at Washta, on the 30th. The average monthly maximum was 93.2°, and the average monthly minimum was 37.4°. The greatest daily range was 50° at Washta, and the average of greatest daily ranges was 34.2°. The average precipitation for the State, as shown by records of 121 stations, was 4.16 inches, which is 0.85 of an inch above the normal. By sections the averages were as follows: Northern section, 5.40 inches, which is 2.01 inches above the normal; Central section, 3.47 inches, which is 0.22 of an inch above the normal; Southern section, 3.61 inches, which is 0.31 of an inch above the normal. The largest amount reported was 11.10 inches at Thurman, and the least amount reported was 0.64 of an inch at Mount Vernon. The greatest daily rainfall reported was 7.60 inches at Thurman, on the 16th and 17th. The average number of days on which .01 of an inch or more fell was 8. The prevailing direction of the wind was southeast, south and southwest. The highest velocity reported was 48 miles an hour from the west, at Sioux City, on the 15th. The average number of clear days was 16; partly cloudy, 8; and cloudy, 6 days.

October.—The monthly mean temperature for the State, as shown by the records of 117 stations, was 50.5°, which is 2° below the normal. By sections the mean temperatures were as follows: Northern section, 48.4°, which is 2.5° below the normal; Central section, 50.8°, which is 1° below the normal; Southern section, 52.4°, which is 2.3° below the normal. The highest monthly mean was 54.4°, at St. Charles. The lowest monthly mean was 43° at Rock Rapids. The highest temperature reported was 87° at Ames and Bedford on the 13th and 20th; the lowest was 7°, at Elkader, on the 31st. The average monthly maximum was 78.9°, and the average monthly minimum was 20.4°. The greatest daily range was 56° at Woodburn, and the average of greatest ranges was 36.3°. The average precipitation for the State, as shown by the records of 126 stations, was 1.96 inches, which is .45 of an inch below the normal. The averages by sections were as follows: Northern section, 2.82 inches, which is .63 of an inch above the normal; Central section, 1.85 inches, which is .60 of an inch below the normal; Southern section, 1.20 inches, which is 1.41 inches below the normal. The largest amount reported was 4.25 inches, at Larrabee, and the lowest amount reported was .50 of an inch at Allerton. The greatest daily rainfall reported was 2.60 inches, at Pocahontas on the 22d and 23d. The average number of days on which .01 of an inch or more was reported was 6. The prevailing direction of the wind was northwest. The highest velocity reported was 50 miles per hour, from the northwest, at Sioux City, on the 8th. The average number of clear days was 14; partly cloudy 7, and cloudy days 10.

November.—The monthly mean temperature for the State, as shown by the records of 115 stations, was 35.4°, which is 0.2° above the normal for November. By sections the mean temperatures were as follows: Northern section, 33.6°, which is 1.0° above the normal; Central section, 35.5°, which is 0.5° above the normal; Southern section, 37.1°, which is 0.9° below the normal. The highest monthly mean was 38.8° at Keokuk. The lowest monthly mean was 31.2 at Sibley. The highest temperature reported was 76° at Corydon, Oskaloosa and St. Charles, on the 6th. The lowest temperature reported was 5° below zero, at Woodburn, on the 22d. The average monthly maximum was 69.6°, and the average monthly minimum was 8.7°. The greatest daily range was 47° at Woodburn, and the average of greatest daily ranges was 32.4°. The average precipitation for the State, as shown by records of 123 stations, was 2.03 inches, which is 0.72 of an inch above the normal. The averages by sections were as follows: Northern section, 1.80 inches, which is 0.55 of an inch above the normal; Central section, 2.17 inches, which is 0.76 of an inch above the normal; Southern section, 2.11 inches, which is 0.82 of an inch above the normal. The largest amount reported was 3.86 inches at Preston; the least amount reported was 0.35 of an inch at Washta. The greatest daily rainfall reported was 2.00 inches at Preston, on the 25th. The average number of days on which .01 of an inch or more was reported, was 8. The prevailing direction of the wind was northwest. The highest velocity reported was 48 miles per hour, at Sioux City, on the 1st. The average number of clear days was 9; partly cloudy, 7; and cloudy days, 14.

December.—The monthy mean temperature for the State, as shown by the records of 116 stations, was 25.7°, which is 2.7° above the normal for Iowa. By sections the mean temperatures were as follows: Northern section, 23.5°, which is 3.5° above the normal; Central section, 24.2°, which is 1.1° above the normal; Southern section, 29.5°, which is 3.9° above the normal. The highest monthly mean was 31.6°, at Keokuk, and the lowest monthly mean was 19.9° at Elkader. The highest temperature reported was 65° at Allerton, Chariton, Corydon and Clarinda on the 5th and 12th. The lowest temperature reported was —9° at Washta on the 18th. The average monthly maximum was 50.3°, and the average monthly minimum was —2.7°. The greatest daily range was 43° at Iowa City, Keosauqua, Mount Pleasant and Stockport. The average of greatest daily ranges was 32.6°. The average precipitation for the State, as shown by the records of 113 stations, was 1.43 inches, which is .18 of an inch above the normal. By sections the averages were as follows: Northern section, 1.12 inches, which is .07 of an inch above the normal; Central section, 1.47 inches, which is .13 of an inch above the normal; Southern section, 1.71 inches, which is .34 of an inch above the normal. The largest amount reported was 2.81 inches, at Independence. The least amount reported was .37 of an inch at Estherville. The greatest daily rainfall reported was 2.15 inches, at Bloomfield, on the 30th. The average number of days on which .01 of an inch or more was reported was 6. The prevailing direction of the wind was northwest. The highest velocity of wind reported was 47 miles per hour, from the northwest, at Sioux City, on the 13th. The average number of clear days was 11; partly cloudy 7, cloudy days 13.

Annual Precipitation Chart 1906.


Scale of Shades.
Less than 30 in.
30 to 40 in.
Over 40 in.
LYON
OSCEOLA
DICKINSON
EMMET
KOSSUTH
WINNEBAGO
WORTH
MITCHELL
HOWARD
WINNESHIEK
ALLAMAKEE
SIOUX
O'BRIEN
CLAY
PALO ALTO
HANCOCK
CERRO GORDO
FLOYD
CHICKASAW
FAYETTE
CLAYTON
PLYMOUTH
CHEROKEE
BUENA VISTA
POCAHONTAS
HUMBOLDT
WRIGHT
FRANKLIN
BUTLER
BREMER
BLACK HAWK
BUCHANAN
DELAWARE
DUBUQUE
JACKSON
CLINTON
WOODBURY
IDA
SAC
CALHOUN
WEBSTER
HAMILTON
HARDIN
GRUNDY
TAMA
BENTON
LINN
JONES
CEDAR
SCOTT
MUSCATINE
MONONA
CRAWFORD
CARROLL
GREENE
BOONE
STORY
MARSHALL
POWESHIEK
IOWA
JOHNSON
HARRISON
SHELBY
AUDUBON
GUTHRIE
DALLAS
POLK
DES MOINES
JASPER
MAHASKA
KEOKUK
WASHINGTON
LOUISA
POTTAWATTAMIE
CASS
ADAIR
MADISON
WARREN
MARION
MONROE
WAPELLO
JEFFERSON
HENRY
DES MOINES
MILLS
MONTGOMERY
ADAMS
UNION
CLARKE
LUCAS
APPANOOSE
DAVIS
VAN BUREN
LEE
FREMONT
PAGE
TAYLOR
RINGGOLD
DECATUR
WAYNE
31.11
33.19
35.68
36.93
29.66
27.79
27.34
22.79
28.07
29.64
28.97
25.46
26.17
30.53
29.04
30.62
30.59
25.43
29.91
31.20
33.16
21.16
29.44
29.65
29.99
28.37
30.98
33.99
27.91
25.77
28.14
27.94
28.08
28.60
28.58
40.64
27.11

DATE OF LAST KILLING FROST IN SPRING AND FIRST IN FALL IN IOWA FOR 1906.

Stations.	Killing Frost.		Stations.	Killing Frost.	
	Last in Spring	First in Autumn		Last in Spring	First in Autumn
Afton	May 6	October 9	Iowa Falls	May 28	October 1
Albia	May 9	October 10	Jefferson	May 6	October 9
Algona	May 7	October 9	Keokuk	April 1	October 10
Allerton	May 9	October 10	Keosauqua	May 9	October 3
Alta	May 9	October 6	Knoxville	May 7	October 10
Alton	May 9	September 30	Larrabee	May 7	October 6
Amana	May 9	October 6	LeMars	May 9	September 30
Ames	May 9	October 6	Lenox	May 9	October 6
Atlantic	May 28	September 27	Leon	May 9	October 9
Audubon	May 9	September 27	Little Sioux	May 6	October 10
Baxter	May 10	October 10	Logan	May 9	October 9
Bedford	May 9	October 6	Marshalltown	May 9	October 1
Belle Plaine	May 9	October 10	Mason City	May 7	October 9
Bonaparte	May 9	October 10	Mount Ayr	May 9	October 10
Boone	May 6	October 10	Mount Pleasant	May 9	October 10
Britt	May 9	October 6	Mount Vernon	May 9	October 10
Burlington	May 9	October 10	New Hampton	May 9	October 10
Carroll	May 9	October 10	Newton	May 9	October 10
Cedar Rapids	May 7	October 1	Northwood	May 7	October 9
Chariton	May 9	October 1	Odebolt	May 6	October 6
Charles City	May 9	October 6	Ogden	May 9	
Clarinda	May 9	October 1	Olin	May 10	October 9
Clear Lake	May 7	October 9	Onawa	May 6	October 9
Clinton	May 9	October 10	Osage	May 7	October 6
College Springs	May 9	October 9	Oskaloosa	May 9	October 6
Columbus Junction	May 7	October 10	Ottumwa	May 9	October 10
Corning	May 9	October 1	Pacific Junction	May 9	October 10
Corydon	May 9	October 9	Pella	May 9	October 10
Creston	May 9	October 9	Perry	May 9	October 9
Davenport	May 7	October 10	Plover	May 9	October 6
Decorah	May 28	October 10	Pocahontas	May 7	October 6
Delaware	May 10	October 10	Preston	May 10	October 10
Denison	May 28	September 30	Ridgeway	May 7	October 10
Des Moines	April 1	October 10	Rockwell City	May 9	October 6
De Soto	May 7	October 1	Sac City	May 7	October 9

DATE OF LAST KILLING FROST IN SPRING AND FIRST IN FALL IN IOWA FOR 1906—CONTINUED.

Stations	Killing Frost		Stations	Killing Frost	
	Last in Spring	First in Autumn		Last in Spring	First in Autumn
Dows	May 9	October 1	St. Charles	May 9	October 9
Dubuque	May 9	October 10	Sheldon	May 28	October 6
Earlham	May 9	October 1	Sibley	May 9	October 6
Elkader	May 28	October 1	Sigourney	May 9	October 6
Elliott	May 9	October 9	Sioux Center	May 8	October 1
Estherville	May 8	September 30	Sioux City	May 6	September 30
Forest City	May 8	October 6	Stockport	May 9	October 10
Fort Dodge	May 7	October 5	Stuart	May 7	October 9
Galva	May 28	October 6	Thurman	May 9	October 10
Glenwood	May 6		Tipton	May 7	October 10
Grand Meadow	May 9	October 6	Toledo	May 9	October 1
Greenfield	May 9	October 9	Vinton	May 7	
Grinnell	May 9	October 1	Wapello	May 7	October 10
Grundy Center	May 7	October 1	Washington	May 9	October 10
Guthrie Center	May 10	October 1	Washta	May 28	September 27
Hampton	May 7	October 10	Waterloo	May 9	October 10
Hancock	May 9	October 6	Waukee	May 9	October 6
Hanlontown	May 9		Waverly	May 7	October 10
Harlan	May 9	October 1	Webster City	May 28	October 10
Hopeville	May 9	October 9	West Bend	May 9	October 9
Humboldt	May 7	October 6	Whitten	May 9	October 1
Ida Grove	May 28	September 30	Wilton Junction	May 7	October 10
Independence	May 9		Winterset	May 6	October 9
Indianola	May 9	October 10	Woodburn	May 9	October 1
Inwood	May 28	September 30	Zearing	May 9	October 1
Iowa City	May 9	October 10			

CLIMATE AND CROP REVIEW, 1906.

The year 1906 was exceptionally favorable for agriculture and other industries in Iowa. The tabulated records of all stations show that the mean temperature of the State was 48.7°, which is 1° above the normal. The winter was mild and favorable for the protection of fall seeded crops, and for the care of farm animals. The average amount of precipitation for the year was 31.23 inches, which is about half an inch below the normal for Iowa. The distribution of rainfall was variable, the heaviest amounts being reported in the eastern half of the northern section, and the least amounts were in the southern section. But in all these parts there was sufficient moisture to produce more than an average yield of the great staples on which the prosperity of the State depends.

January was 4.8° warmer than the average, and February also brought an excess of 4.2°. Both months had a small excess of precipitation. March was relatively much colder, the mean temperature being 5.7° below the normal. The snow fall was heavier and the weather was more stormy and inclement than during the preceding winter months. Conditions were not favorable for field work, and farm stock required more care and forage than usual at that period. The last five days of the month were springlike.

The mean temperature of April, 52.5°, was about 3.1° above the normal; and the rainfall, 2.42 inches, was .46 of an inch below the normal for the State. The first half of the month was showery and cloudy; but the latter half was generally fair and warm, affording good conditions for spring plowing, which progressed rapidly, with the soil in good tilth and warm enough to insure germination of grain and grass. At the close of April the season was about normal in respect to the growth of grasses and foliage. Farm work, however, was somewhat belated by wet weather in March and the early part of April.

May was about normal in temperature, the mean being 60.8° for the State. There were sharp fluctuations in temperature, with frosts in all districts about the 6th to the 9th, and on the 28th, though not materially harmful to vegetation and fruit. The average rainfall was 3.54 inches, which is 0.70 of an inch below the normal for the State. The distribution was unequal, the northern section having an excess of 1.40 inches, while the central section was deficient 1.09 inches, and the southern section was deficient 2.42 inches. In portions of the southern section the dry weather was somewhat unfavorable for pastures, meadows and spring seeded crops. The conditions, however, were favorable for planting corn, and the moisture was sufficient to secure a good stand.

June was slightly cooler than normal, the mean temperature being 67.9°, which is 1.7° below the normal. The average rainfall was 3.92 inches, which is 0.63 of an inch below the normal. In the southern section, where there was greatest need of moisture, the average was 4.50 inches. The greater part of the rainfall came in the latter half of the month, affording timely relief from drouthy conditions prevalent in nearly all districts. The dry weather in early June was favorable for corn, which made a fine growth and had been thoroughly cultivated. There was sufficient moisture in the soil to maintain a healthy growth of the corn plant, and at the close of the month nearly all fields gave promise of a heavy yield. Oats, barley and wheat made fairly good stands, but headed out shorter than usual. The hay crop was lighter than usual, but the quality was excellent. As a whole, June was an ideal month for farming operations, and the staple crops were above the ten-year average on July 1st.

The average daily temperature in July was 3.5° below the normal for the State, the mean being 70.9°. The nights were cool, but the day temperatures were sufficiently high to maintain the normal growth of corn and other immature crops. The average rainfall was 3.04 inches, which is 1.31 inches below the normal. The cool nights brought on heavy dews, and the humidity of the air was about normal, serving to mitigate the drouthy conditions in districts where the rainfall was lightest. The distribution of rainfall was quite unequal, ranging from less than two inches in about one-fourth of the State to more than 5.00 inches in a large area. The driest areas were in the southeast and the northwest quarters of the State. Except in a very small area there was sufficient moisture to maintain a healthy growth of corn, which was generally well advanced and promising at the close of the month. Hay and small grain were harvested in good season, under favorable conditions to maintain a good quality of these crops. There was less than usual damage by windstorms and hail in July.

August was the warmest month of the season, the average temperature for the State being 74.1°, which is 2.1° above the normal. It was 3.2° warmer than July, which is usually the warmest month of the summer in this latitude. The average rainfall was 3.95 inches, which is 0.38 of an inch above the normal. The distribution was unequal, the northern section having nearly twice as much moisture as the average of the southern section. The larger portion of the rainfall came in the first decade, and the balance of the month was favorable for harvesting, threshing and other field work. At the close of the month the corn crop was in a very satisfactory condition, and much of it well advanced toward maturity, giving promise of more than an average yield. The summer months were favorble for apples, peaches, cherries and most of the small fruit crops, and garden truck.

September was warmer than usual, with more than the normal amount of rainfall, and excess of sunshine in the larger part of the State. The mean temperature was 67.2°, which was 3.4° above the normal. The average rainfall was 4.16 inches, or 0.85 of an inch in excess of the September normal. The northern and western districts received much more than the other parts of the State. The bulk of the rainfall came in the second decade, and the balance of the month afforded ideal conditions for farm operations, and the normal ripening of corn and other late maturing crops. The month was wholly exempt from damaging frosts. Conditions were favorable for fall plowing, and seeding fall wheat and rye. All crops were well matured at the close of the month.

October was exceptionally fine, having more than the average number of clear days, and less than the average amount of rainfall. The average temperature for the State was 50.5°, which is 2° below the normal. The average rainfall was 1.96 inches, which is 0.45 of an inch below the normal. Nearly all the rainfall occurred in the ten days from the 18th to the 27th. In the first half of the month conditions were unusually favorable for drying out the bulky corn crop, and husking was begun somewhat later than usual. There were but few days too wet for work in the fields. All late maturing crops were harvested under favorable conditions.

November was slightly above the normal in temperature and precipitation. The monthly mean temperature was 35.4°, and the average precipitation was 2.03 inches, which is about 0.72 of an inch above the normal. During the first half of the month conditions were fairly good for husking corn and other field work, and at the close of the month the bulk of the largest corn crop ever produced in Iowa was well secured. In the latter half of the month snow flurries, and alternate freezing and thawing, hindered work to some extent.

December was about 2.7° warmer than usual, the average temperature being 25.7°. The average precipitation, which was mostly in the form of rain, was 1.43 inches, or 0.18 of an inch above the normal. As a whole, it was unusually mild and favorable for outdoor work and the care of stock.

The year 1906 closed as it began, with moderate temperature and favorable weather conditions, typical of the most productive year known in Iowa during the last quarter of a century.

IOWA CROPS, 1906,—NUMBER OF ACRES BY COUNTIES.

COUNTIES.	Winter wheat, acres.	Spring wheat, acres.	Corn, acres.	Oats, acres.	Rye, acres.	Barley, acres.	Flax, acres.	Potatoes, acres.	Hay (tame) acres	Hay (Wild) acres.
Adair	220	3,810	99,110	31,190	70	2,120	----------	1,190	45,410	5,250
Adams	910	1,080	75,120	16,270	130	2,150	----------	710	36,120	2,140
Allamakee	420	1,420	45,980	40,920	1,460	10,960	170	1,280	44,760	1,690
Appanoose	730	----------	56,050	11,260	450	140	----------	1,070	56,380	1,010
Audubon	----------	10,540	95,630	30,130	110	7,250	----------	1,020	29,960	4,200
Benton	----------	780	126,090	67,120	450	13,870	----------	1,810	48,120	9,050
Black Hawk	----------	520	102,740	53,170	1,250	3,010	----------	1,570	35,070	12,500
Boone	----------	1,820	110,820	48,440	220	280	----------	1,280	25,110	21,150
Bremer	----------	320	62,820	52,870	1,030	2,580	140	1,380	21,870	22,120
Buchanan	----------	120	92,820	48,530	630	1,820	----------	1,420	40,460	10,920
Buena Vista	----------	1,470	104,530	65,870	50	2,640	220	1,310	25,120	20,280
Butler	----------	310	110,220	69,620	960	1,190	60	1,250	26,020	11,620
Calhoun	----------	1,810	109,710	63,530	160	3,670	90	1,080	22,450	18,120
Carroll	----------	6,120	115,270	58,310	80	5,920	----------	1,710	29,670	14,110
Cass	410	9,640	117,210	29,510	160	3,270	----------	1,420	34,290	2,190
Cedar	560	610	108,210	29,820	600	16,610	----------	1,240	47,980	420
Cerro Gordo	----------	790	92,270	68,850	180	1,820	400	1,310	30,420	12,540
Cherokee	----------	5,160	116,820	53,780	50	6,410	160	1,200	29,920	10,270
Chickasaw	----------	630	64,680	65,230	520	3,830	1,810	1,370	27,520	13,110
Clarke	150	----------	54,330	14,450	130	120	----------	620	48,920	310
Clay	----------	1,330	88,920	60,230	90	7,460	170	970	26,950	20,120
Clayton	650	2,420	75,620	61,580	3,910	12,310	----------	1,830	52,060	1,980
Clinton	420	1,240	120,910	38,650	1,810	9,330	----------	1,280	64,360	4,020
Crawford	----------	18,290	140,260	50,370	180	6,690	----------	1,920	42,120	6,380
Dallas	1,020	2,180	124,020	40,120	520	630	----------	1,080	30,620	180
Davis	650	----------	60,340	16,560	650	500	----------	730	50,520	110
Decatur	610	----------	67,120	13,850	150	40	----------	680	46,750	380
Delaware	740	----------	90,260	39,160	1,450	8,780	----------	1,190	47,110	6,060
Des Moines	1,180	260	65,010	27,220	1,510	560	----------	980	28,180	210
Dickinson	----------	2,130	48,820	37,410	60	12,750	460	540	13,380	17,670
Dubuque	110	1,460	70,410	49,180	920	5,580	----------	1,980	53,130	2,140
Emmet	----------	820	54,530	44,180	70	1,820	210	510	17,630	15,210
Fayette	140	1,410	93,120	65,750	680	9,360	510	1,640	55,910	12,240

Floyd		180	92,450	72,160	1,130	4,630	610	1,870	30,910	5,320
Franklin		1,310	106,410	77,220	110	1,120		1,080	29,540	20,140
Fremont	3,040	1,570	120,140	11,180	330	210		710	18,030	4,110
Greene		710	112,480	46,540	50	1,740	110	830	29,490	20,130
Grundy		980	104,090	65,030	1,280	7,010		1,580	25,180	9,760
Guthrie	320	4,680	95,210	38,540	110	2,130		610	36,260	6,840
Hamilton		1,820	115,170	59,620	25	670	130	1,440	30,110	23,110
Hancock		1,910	88,210	80,120	40	2,040		940	25,050	15,940
Harden		2,370	112,130	60,180	130	1,140		1,310	27,910	15,410
Harrison		20,810	140,160	25,160	200	1,510		1,480	19,170	16,110
Henry	930		71,310	30,110	2,610	950		590	31,460	80
Howard		810	52,280	56,910	40	9,210	2,120	960	31,760	10,220
Humboldt		3,610	74,210	48,070	20	1,240	120	520	22,170	15,960
Ida		8,710	95,820	37,110	110	6,580		950	25,050	4,120
Iowa	210	810	94,030	38,180	590	4,010		1,230	43,910	1,510
Jackson	220	1,300	73,140	28,620	1,210	5,130		1,150	56,920	220
Jasper	410	4,230	140,380	46,150	190	2,510		1,820	42,430	2,250
Jefferson	1,230		64,890	23,040	2,910	1,360		620	32,080	60
Johnson	460	290	105,820	39,160	1,420	7,160		1,320	50,210	1,910
Jones		580	86,530	26,630	810	7,680		1,030	49,480	460
Keokuk	610	720	102,410	32,160	1,640	4,280		910	42,610	410
Kossuth		3,420	147,070	120,280	120	3,020	890	1,490	37,620	75,280
Lee	13,150		65,120	20,640	3,960	120		1,120	45,110	100
Linn		2,110	117,360	50,850	920	960		1,910	60,110	5,010
Louisa	1,030	210	73,010	22,960	2,690	610		620	19,520	1,620
Lucas	1,510	920	56,390	12,260	370	40		490	65,490	310
Lyon		18,360	98,980	57,170	150	48,120	120	1,280	17,850	10,420
Madison	810	1,230	89,110	27,230	210	2,940		750	41,810	1,520
Mahaska	1,080	810	109,270	29,280	990	5,740		1,040	39,410	920
Marion	1,560	1,210	100,640	27,290	350	1,520		890	36,170	1,080
Marshall	980	1,840	120,550	57,850	280	2,380		1,290	34,680	1,610
Mills	1,850	4,110	98,120	13,910	40	820		860	22,410	5,410
Mitchell		970	58,020	73,970	210	10,340	2,150	1,520	29,030	2,570
Monona	2,810	12,270	130,850	19,280	250	6,420		1,210	9,920	20,110
Monroe	420	310	44,650	9,510	870	360		730	39,470	220
Montgomery	3,980	9,260	99,210	14,580	90	2,610		760	36,730	1,280
Muscatine	810	420	76,210	18,610	3,190	9,770		1,820	25,850	1,070
O'Brien		6,030	103,270	60,960	50	25,110	320	1,140	26,120	10,240
Osceola		4,120	57,480	47,960	90	24,380	460	670	17,130	9,150
Page	8,570	2,210	118,220	17,240	350	920		980	38,120	2,450
Palo Alto		1,170	82,550	12,180	40	2,420	570	890	14,870	35,590
Plymouth		50,150	170,110	66,380	180	17,080	160	1,820	25,190	26,120
Pocahontas		1,080	92,610	60,240	80	1,520	560	1,020	17,820	30,826
Polk	1,030	1,510	118,650	38,320	310	240		2,050	36,210	6,350
Pottawattamie	1,270	22,910	218,120	42,120	220	2,510		2,510	48,240	12,070
Poweshiek	150	1,230	107,510	35,410	210	5,770		1,040	44,110	1,060
Ringgold	420	220	74,950	20,160	120	30		620	52,420	410
Sac		2,110	120,080	50,410	70	9,180	120	1,020	32,610	12,430

IOWA CROPS, 1906—NUMBER OF ACRES BY COUNTIES—CONTINUED.

COUNTIES	Winter wheat, acres,	Spring Wheat, acres.	Corn, acres.	Oats, acres.	Rye, acres.	Barley, acres.	Flax, acres.	Potatoes, acres.	Hay (tame) acres.	Hay (Wild) acres.
Scott	1,020	1,820	80,120	20,610	1,040	31,290	----------	4,020	30,740	4,110
Shelby	----------	15,120	122,480	30,670	190	7,260	----------	1,080	35,310	5,680
Sioux	----------	35,310	150,230	64,230	40	36,410	60	1,510	22,350	20,110
Story	160	970	120,760	55,190	290	510	----------	980	30,180	12,120
Tama	----------	2,910	122,610	56,070	1,170	15,160	----------	1,710	60,120	4,210
Taylor	1,430	----------	86,050	17,230	360	1,390	----------	620	45,190	1,050
Union	170	80	62,830	18,010	80	230	----------	780	45,610	970
Van Buren	1,560	120	53,710	18,290	2,170	60	----------	560	48,670	210
Wapello	920	----------	62,740	16,280	2,040	1,520	----------	980	36,590	180
Warren	420	910	92,170	21,890	210	810	----------	880	42,310	1,260
Washington	920	120	101,420	39,150	1,360	2,960	----------	790	39,510	160
Wayne	130	----------	70,110	16,290	140	80	----------	480	70,140	120
Webster	----------	2,820	112,230	70,570	180	930	120	1,070	27,210	30,810
Winnebago	----------	4,280	55,110	46,870	50	1,480	560	610	17,510	25,160
Winneshiek	160	2,920	75,120	70,620	280	17,120	2,710	1,090	47,120	5,910
Woodbury	890	19,580	181,190	42,100	670	12,920	30	1,520	21,610	15,950
Worth	----------	2,090	40,620	60,560	40	4,310	2,490	740	24,830	15,810
Wright	----------	2,120	99,310	70,110	160	1,820	340	810	25,710	19,930
Total for State	65,560	377,250	9,443,960	4,163,800	62,530	558,870	19,160	115,310	3,518,750	899,850

CROP REPORT, JUNE 1, 1906.

Reports received June 1st from county and township correspondents of the Iowa Weather and Crop Service made a very favorable showing as to the area planted and the average condition of the staple crops of this State as compared with preceding years.

Corn.—The aggregate area of corn planted this season appears to be 9,443,960 acres. These figures indicate an increase of 145,000 acres as compared with the area harvested last year, and a decrease of about 99,000 acres compared with the acreage shown by the State census covering the year 1904. The average condition of the corn crop on June 1st was placed at 99 per cent for the State, as against 90 per cent in 1905 and 1904 on the corresponding date.

Wheat.—The area of spring wheat is estimated to be 357,250 acres; and winter wheat 65,560, making a total wheat acreage of 442,810 acres. This indicates a loss of 74,464 acres since 1904, as shown by the last State census. The estimated condition of the crop is 98 per cent, which is about the same as last year.

Oats.—Total acreage sown, 4,166,800 acres, a decrease of 148,830 acres as shown by the last census. Condition of the crop 96 per cent, a gain of one point above last year.

Barley.—Acreage sown, 558,870 acres; condition of the crop 96 per cent, the same as last year.

Rye.—Acreage of rye sown, 62,535 acres, a slight decrease compared with the census year. Condition of the crop, 97 per cent, or one point below last year.

Flax.—The acerage of flax is reduced to about 19,160 acres, showing a reduction of 5,837 acres since 1904, according to the census figures; condition of the crop, 94 per cent, same as last year.

Potatoes.—The acreage of the potato crop is estimated to be 115,310 acres, which is about the average of recent years. Condition of crop, 101 per cent.

Meadows.—Acreage of meadows, including all cultivated hay crops, 3,518,750 acres. Condition of hay crop, 92 per cent.

Wild Hay.—Acreage, 899,850; condition, 90 per cent.

CROP CONDITIONS, JULY 1, 1906.

Following is a summary of reports received from correspondents of the Iowa Weather and Crop Service, giving estimates of the condition of the staple farm crops on July 1, 1906:

Corn, 99 per cent; wheat, 94; oats, 84; rye, 93; barley, 91; flax, 92; potatoes, 94; hay (tame), 75; pastures, 88; apples, 70; grapes, 85.

On July 1, 1905, the estimates were as follows: Corn, 92 per cent, wheat, 94; oats, 96; rye, 96; barley, 98; flax, 95; hay, 101; pastures, 105; apples, 65; grapes, 88.

CROP CONDITIONS, AUGUST 1, 1906.

Following is a summary of reports received from correspondents of the Iowa Weather and Crop Service giving estimates of the condition of staple farm crops August 1, 1906:

Corn, 99 per cent; spring wheat, 93; oats, 90; flax, 95; hay, 79; pastures, 83; potatoes, 91; apples, 70; grapes, 94.

Last year, at corresponding date, the estimates were: Corn, 94 per cent; wheat, 93; oats, 97; flax, 78; potatoes, 92; pastures, 103; apples, 40; grapes, 91.

FINAL CROP REPORT, 1906.

TOTAL YIELD OF SOIL PRODUCTS—VALUE AT FARM PRICES DECEMBER 1.

Tabulated reports by counties afford ample evidence that the season of 1906 brought bountiful crops on the well tilled farms of Iowa. In respect to the aggregate of yield and values of staple products, a new record has been scored for this foremost agricultural State.

Corn.—The estimated acreage of the corn crop, based upon the returns of the State census of 1905, is about 9,443,960 acres. Carefully revised estimates of the yield by counties show an average for the State of 41 bushels per acre, and the total output for the State appears to be 388,348,920 bushels. This is about 42,000,000 bushels above the highest total credited to the State by the State bureau in any previous year. At the average farm price, 33 cents per bushel, the corn crop is now worth $128,155,143. As the greater portion of this crop will be consumed in the State, and marketed in form of live stock and dairy products, the potential value of this great cereal is 10 to 15 cents per bushel above the present selling price. The quality of corn that has been harvested in good season is above the average. It is a good crop to keep, so far as may be practicable, for the lean years that may come in the near future.

Winter Wheat.—The average yield of winter wheat was 23 bushels per acre. Total yield, 1,566,050 bushels. Average farm price is about 67 cents per bushel; value of crop, $1,049,253.

Spring Wheat.—Average yield per acre, 15 bushels; total yield, 5,603,880 bushels. Farm value, 63 cents per bushel; value of crop, $3,530,444.

Oats.—Average yield, 34 bushels per acre; total crop, 142,036,580 bushels; farm price, 27 cents; total value, $38,349,876.

RYE.—Average yield, 17½ bushels per acre; total crop, 1,093,160 bushels. Farm price, 48 cents; total value, $520,716.

BARLEY.—Average per acre, 26½ bushels; total yield, 14,858,830 bushels; farm price, 36 cents; total value, $5,349,178.

FLAX SEED.—Average per acre, 10.7 bushels; total product, 205,280 bushels; farm price, 97 cents; total value, $200,091.

POTATOES.—Average yield per acre, 101 bushels; total product, 11,697,500 bushels; average price, 48 cents; total value, $5,614,800.

HAY (TAME).—Average per acre, 1.3 tons; total yield, 4,892,950 tons; farm value December 1, $7.50 per ton; total value, $36,697,125.

HAY (WILD).—Average per acre, 1.2 tons; total yield, 1,110,690 tons; farm price, $5.50; total value, $6,108,795.

PASTURAGE AND GRAZING.—This includes pastures, grazing in meadows and grain fields after harvest and in cornfields in fall and winter. Having given this matter much study, making it a subject of interview with many of our best informed farmers, I am willing to stand committed to the proposition that the value of pasturage and grazing is above, rather than below, the total value of $90,000,000, with which it has been credited in the following table:

TABULATED CROP SUMMARY

Crops	Total Products	Farm Value Dec. 1
Corn	388,348,920 bus.	$ 128,155,143
Winter wheat	1,566,060 bus.	1,049,253
Spring wheat	5,603,880 bus.	3,530,444
Oats	142,036,580 bus.	38,349,976
Rye	1,093,160 bus.	520,716
Barley	14,858,830 bus.	5,439,178
Flax seed	205,280 bus.	200,091
Potatoes	1,697,500 bus.	5,614,800
Hay (tame)	4,892,950 tons	36,697,125
Hay (wild)	1,110,690 tons	6,108,795
Pasturage and grazing	Estimated	90,000,000
Buckwheat	Estimated	85,000
Sweet potatoes	Estimated	150,000
Sorghum and broomcorn	Estimated	195,000
Timothy and clever seed	Estimated	1,800,000
Alfalfa and millet	Estimated	550,000
Sweet corn	Estimated	750,000
Fruit crops	Estimated	6,300,000
Garden truck	Estimated	5,000,000
Total		$ 330,495,421

The above figures take no account of the increment of value derived from the consumption of the soil products in the live stock industry of this state.

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AVERAGE PER ACRE AND TOTAL YIELD—BY COUNTIES.

COUNTIES	Spring Wheat		Spring Wheat		Corn		Oats		Rye		Barley		Flax Seed		Potatoes		Hay (Tame)		Hay (Wild)	
	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Tons per acre	Total tons	Tons per acre	Total tons
Adair	20	4,400	16	66,960	42	4,162,620	34	1,060,460	20	1,400	26	55,120	----	-------	70	83,300	1.2	54,490	1.4	7,350
Adams	30	27,300	18	19,440	45	3,380,400	32	520,640	18	2,340	25	53,750	----	-------	50	35,500	1.1	39,730	1.0	2,140
Allamakee	17	7,140	15	216,300	46	2,578,300	36	1,473,120	16	23,360	2[illegible]	284,[illegible]	10	1,700	10[illegible]	131,000	1.5	67,140	2.0	3,380
Appanoose	20	14,400	----	---------	34	1,905,700	30	337,800	21	9,450	20	2,800	----	-------	64	68,480	1.2	57,500	1.5	1,150
Audubon	----	---------	17	178,180	44	4,207,720	36	1,084,680	18	1,980	32	232,000	----	-------	110	112,200	1.5	43,940	1.2	4,290
Benton	20	840	18	14,040	47	4,494,610	40	1,505,200	20	9,000	30	416,100	----	-------	120	217,200	1.8	86,610	1.2	10,860
Black Hawk	----	---------	16	6,720	45	4,623,300	33	1,754,610	17	21,250	30	90,300	----	-------	150	235,500	1.8	63,120	1.4	17,500
Boone	----	---------	13	23,660	45	4,986,900	35	1,695,400	18	3,960	30	8,400	----	-------	95	121,600	1.5	37,660	1.5	31,720
Bremer	----	---------	20	6,400	45	2,826,900	34	1,797,580	22	22,660	30	77,400	----	-------	96	132,480	1.5	32,800	1.4	30,960
Buchanan	18	2,160	16	2,080	43	3,991,260	35	1,698,550	20	12,600	28	50,960	10	450	130	184,600	1.8	72,820	1.5	16,380
Buena Vista	----	---------	15	22,050	45	4,703,850	40	2,634,800	16	800	28	73,920	14	3,080	120	157,200	1.5	37,680	1.5	30,420
Butler	----	---------	15	4,650	40	4,408,800	28	1,939,360	18	17,280	31	36,890	8	480	140	175,000	1.8	46,830	1.4	16,260
Calhoun	----	---------	17	30,770	42	4,607,820	37	2,350,610	20	3,200	25	91,750	9	810	70	75,600	1.5	33,670	1.2	16,930
Carroll	----	---------	16	97,920	42	4,841,380	35	2,040,800	18	1,440	28	165,760	----	-------	110	188,100	1.5	44,500	1.3	18,340
Cass	30	12,300	15	14,460	35	4,102,350	28	826,280	19	3,040	32	104,640	----	-------	70	99,400	1.5	51,430	1.2	2,620
Cedar	22	12,320	16	9,760	48	5,194,080	36	1,073,520	18	11,160	28	51,960	----	-------	110	136,400	1.3	62,370	1.0	420
Cerro Gordo	----	---------	13	10,270	40	3,690,800	32	2,203,200	12	2,160	20	36,400	9	3,690	80	104,800	1.8	54,750	1.5	18,810
Cherokee	----	---------	16	82,560	41	4,689,620	37	1,189,860	20	1,000	30	192,300	----	-------	130	157,300	1.8	53,580	1.3	13,350
Chickasaw	----	---------	12	7,560	37	2,393,160	26	1,721,980	15	7,800	25	95,750	10	18,100	110	150,700	1.4	38,520	1.0	13,110
Clarke	20	3,000	----	---------	36	1,955,880	31	447,950	22	2,860	25	3,000	----	-------	80	49,600	1.1	29,640	0.5	150
Clay	----	---------	15	19,950	38	3,378,960	35	2,108,050	20	1,800	26	193,960	10	1,700	120	112,400	1.8	48,510	1.5	30,180
Clayton	18	11,700	16	38,720	45	3,402,900	35	2,155,300	16	62,560	25	307,750	----	-------	130	235,300	1.5	78,090	1.0	1,980
Clinton	16	6,720	14	17,360	45	5,440,960	30	2,659,500	2[illegible]	41,630	30	279,900	----	-------	[illegible]8	125,440	1.1	8[illegible],930	1.5	6,030
Crawford	20	900	14	254,660	44	6,171,440	35	1,762,950	20	3,600	30	200,700	----	-------	105	201,600	1.8	75,810	1.5	10,320
Dallas	20	20,400	16	34,880	45	5,580,900	37	1,484,440	20	10,400	25	15,750	----	-------	70	75,600	1.2	36,740	1.0	180
Davis	18	11,700	----	---------	35	2,111,900	25	414,000	15	9,750	25	3,710	----	-------	60	43,800	1.0	50,520	1.0	110
Decatur	21	12,810	----	---------	36	2,416,320	30	415,500	18	2,700	----	----------	----	-------	80	54,400	1.0	46,750	1.0	380
Delaware	22	16,280	----	---------	45	4,061,700	36	1,409,760	20	29,000	32	280,960	----	-------	110	130,900	1.3	61,240	1.0	6,060
Des Moines	20	23,600	15	3,900	36	2,340,260	30	816,600	18	27,180	25	14,000	----	-------	85	83,300	1.2	33,810	1.0	210
Dickinson	----	---------	16	34,080	34	1,464,600	25	935,250	18	1,080	20	255,000	11	5,060	60	32,400	1.8	24,080	1.5	26,500

Dubuque	22	2,420	16	23,360	40	2,816,400	35	1,721,300	20	18,400	28	155,240			95	188,100	1.3	69,070	1.0	2,140
Emmet			15	12,300	38	2,072,140	36	1,590,480	18	1,260	32	59,200	10	2,100	130	66,300	1.8	31,730	1.0	15,210
Fayette	18	2,520	14	19,740	42	3,911,040	32	2,104,000	16	10,880	22	205,920	9	4,590	95	155,800	1.5	83,860	1.0	12,240
Floyd			12	2,160	36	3,329,200	33	2,381,280	17	19,210	22	101,860	10	6,100	90	168,300	1.5	46,360	1.0	5,320
Franklin			15	19,650	42	4,469,220	36	2,779,920	16	1,760	30	33,600			120	129,600	1.5	44,310	1.2	24,160
Fremont	25	76,000	15	23,550	40	4,805,600	30	305,400	20	6,600	25	5,250			90	63,900	1.5	27,040	1.5	6,160
Greene			13	9,230	40	4,494,200	38	1,768,520	22	1,100	30	52,200	8	400	90	74,700	1.1	30,430	1.0	20,130
Grundy			15	14,700	43	[illegible],475,870	35	2,276,050	16	20,480	30	210,300			130	205,400	1.5	37,770	1.0	9,760
Guthrie	22	7,040	13	60,840	30	3,713,190	35	1,348,900	12	1,320	30	63,900			90	54,900	1.2	36,260	1.3	8,890
Hamilton	15	600	15	27,300	42	4,827,140	36	2,140,320	24	600	31	20,770	12	2,560	120	172,800	1.6	48,170	1.5	34,660
Hancock			14	26,740	35	3,087,350	31	2,483,720	16	640	22	44,880	11	4,510	85	79,900	1.3	32,560	1.0	15,940
Hardin			16	37,920	42	4,709,460	36	2,166,480	20	2,600	30	34,200			105	137,550	1.4	39,070	1.0	15,410
Harrison	21	8,420	16	332,960	40	5,606,400	35	880,600	18	3,600	25	37,750			95	140,600	1.8	34,500	1.5	24,160
Henry	20	18,600			40	2,852,400	27	812,970	20	52,200	22	20,900			93	54,870	1.2	38,110	1.0	80
Howard			14	4,340	36	1,822,080	30	1,707,300	16	640	30	276,300	12	25,440	80	76,800	1.8	57,160	1.2	12,260
Humboldt			16	57,760	45	3,339,450	40	1,922,800	20	2,400	32	39,680			140	72,800	1.6	35,470	1.0	15,960
Ida			14	121,940	42	4,024,440	38	1,410,180	20	2,200	31	203,980			105	99,750	1.5	37,570	1.2	4,940
Iowa	30	6,300	18	12,580	40	3,617,200	34	916,320	21	12,390	33	169,290			91	111,930	1.1	48,300	1.0	1,510
Jackson	18	3,960	14	18,200	35	2,549,900	29	829,980	20	24,200	30	153,900			107	123,050	1.5	85,380	1.5	330
Jasper	21	8,610	14	60,220	48	6,738,240	37	1,706,550	20	3,800	30	75,300			112	313,840	1.4	59,400	1.2	2,700
Jefferson	18	22,140			35	2,271,150	28	645,120	15	43,650	25	34,000			70	43,400	1.5	48,120	1.0	60
Johnson	30	13,800	20	5,800	46	4,867,720	32	1,253,120	18	25,560	25	179,000			85	112,200	1.2	60,250	1.0	1,910
Jones			14	8,120	45	3,893,850	30	798,900	16	12,960	31	238,080			102	105,060	1.3	64,320	1.0	460
Keokuk	18	10,980	12	8,640	39	3,993,990	30	964,800	15	24,600	24	102,620			90	81,900	1.4	59,650	1.0	410
Kossuth			15	51,300	40	5,682,800	35	4,209,800	16	2,880	23	71,760	10	8,900	104	154,960	1.5	56,430	1.2	90,330
Lee	1	240,800			40	2,601,800	22	453,080	16	63,360	24	2,880			80	89,600	1.1	49,620	1.0	90
Linn			12	25,320	43	5,046,480	36	1,830,600	16	14,720	30	28,800			115	219,650	1.4	84,150	1.2	6,010
Louisa	22	22,660	17	3,570	35	2,555,350	30	718,800	20	53,800	25	15,250			85	52,700	1.3	25,370	1.5	2,430
Lucas	18	27,180	15	13,800	37	2,085,430	28	343,280	16	5,920					105	51,450	1.5	97,230	1.0	310
Lyon			13	238,680	40	3,957,600	36	2,058,120	15	3,150	23	1,106,760	11	1,320	130	166,400	2.0	35,700	1.2	12,500
Madison	22	17,820	18	22,140	44	3,920,840	35	953,050	20	4,200	30	88,200			92	69,000	1.5	62,710	1.2	1,820
Mahaska	21	22,680	18	14,580	42	4,589,340	31	907,680	18	17,820	25	143,500			96	99,840	1.3	51,230	1.0	920
Marion	20	31,200	15	18,150	43	4,328,520	35	955,150	16	5,600	30	45,600			88	78,320	1.4	50,630	1.3	1,410
Marshall	28	24,500	15	27,600	48	5,826,400	40	2,304,400	20	5,500	36	85,680			150	193,500	1.2	41,610	1.0	1,610
Mills	30	55,400	16	65,760	41	4,022,920	35	486,850	20	800	25	20,500			85	73,100	1.5	33,610	2.0	5,820
Mitchell			12	11,640	36	2,088,720	30	2,219,100	15	3,150	22	227,480	10	21,500	75	113,000	1.5	43,540	1.6	4,110
Monona	25	70,250	13	159,510	41	5,384,850	33	636,240	20	4,800	25	160,500			100	121,000	2.0	19,840	1.5	30,160
Monroe	20	8,400	18	14,500	36	1,607,400	25	237,750	14	12,180	20	7,200			106	77,380	1.0	39,470	1.0	220
Montgomery	30	119,400	12	109,680	40	3,968,400	25	364,500	20	1,800	24	62,640			120	91,200	1.0	36,730	1.0	1,280
Muscatine	22	17,820	16	6,700	42	3,200,820	35	651,350	17	54,230	22	214,940			100	182,000	1.5	38,770	2.0	2,140
O'Brien			14	84,420	37	3,820,990	40	2,438,400	15	750	30	753,300	11	3,520	110	125,400	1.5	39,180	1.5	15,360
Osceola			12	49,440	36	2,069,280	33	1,581,680	14	1,260	25	609,500	11	5,060	90	59,300	1.2	20,550	1.0	9,150
Page	30	257,100	15	33,150	42	4,965,240	35	603,600	16	5,600	23	21,160			80	78,120	1.0	38,110	1.0	2,450
Palo Alto			14	16,380	37	3,053,350	35	1,826,300	15	600	24	58,080	8	4,560	130	115,700	1.5	22,310	1.0	35,590
Plymouth			16	802,400	43	7,315,160	34	2,256,920	18	3,240	28	478,240	10	1,600	90	163,800	2.0	50,380	1.2	1,340
Pocahontas			17	18,360	40	3,704,400	35	2,108,400	20	1,600	30	45,600	10	5,600	80	81,600	1.5	26,730	1.0	30,820
Polk	25	25,750	17	25,670	46	5,457,900	33	1,264,560	15	4,650	28	6,720			90	185,400	1.4	50,690	1.2	7,620
Pottawattamie	28	35,560	14	320,740	40	8,724,800	33	1,389,960	15	3,300	25	62,250			100	251,000	1.5	72,360	1.2	14,480

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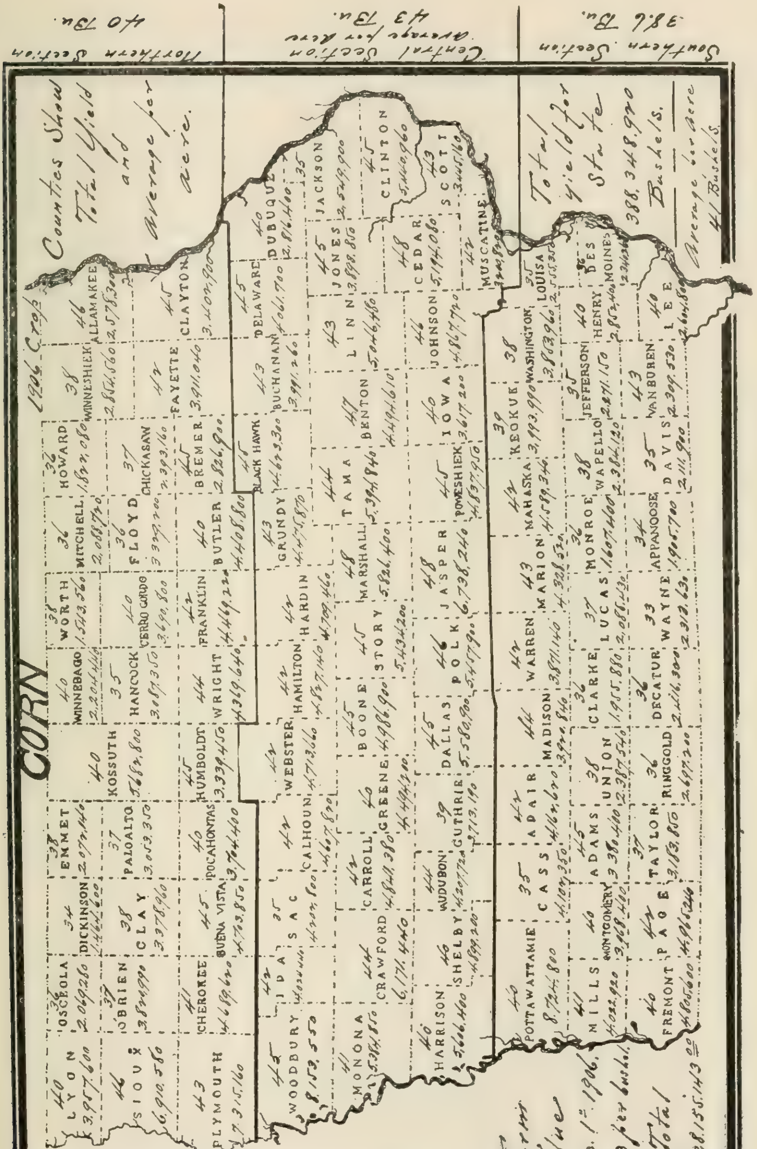
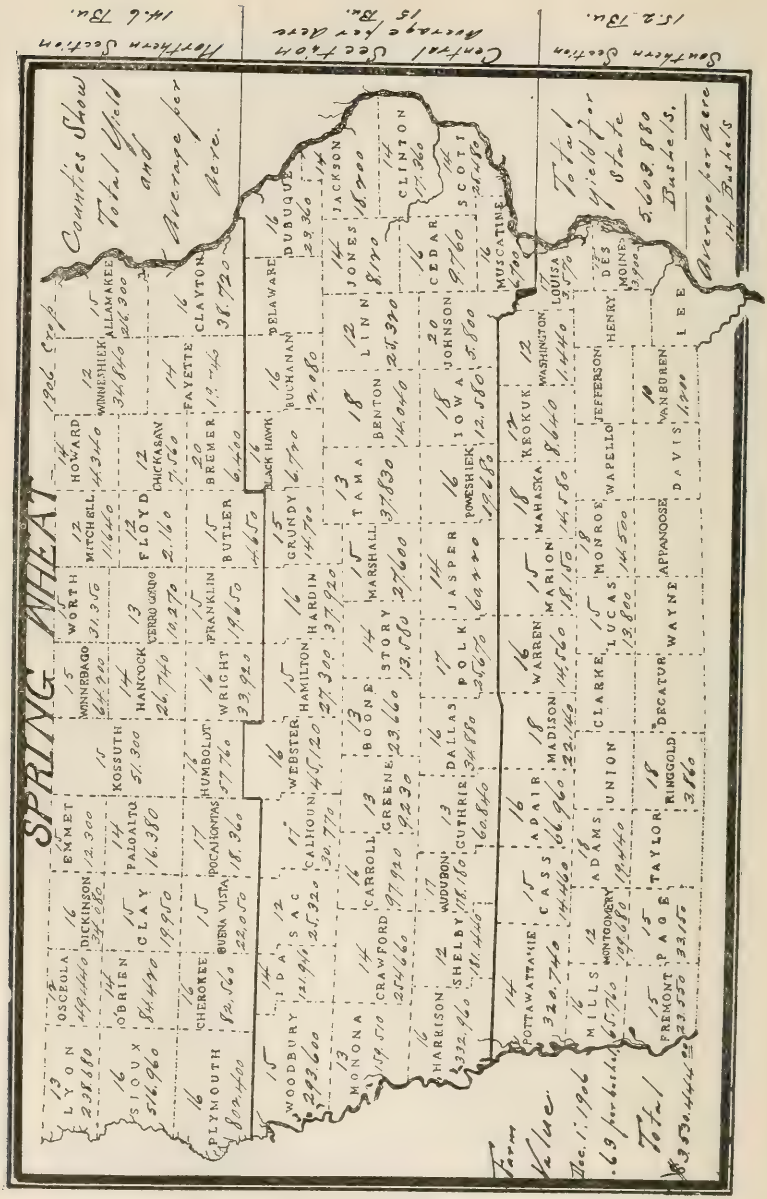
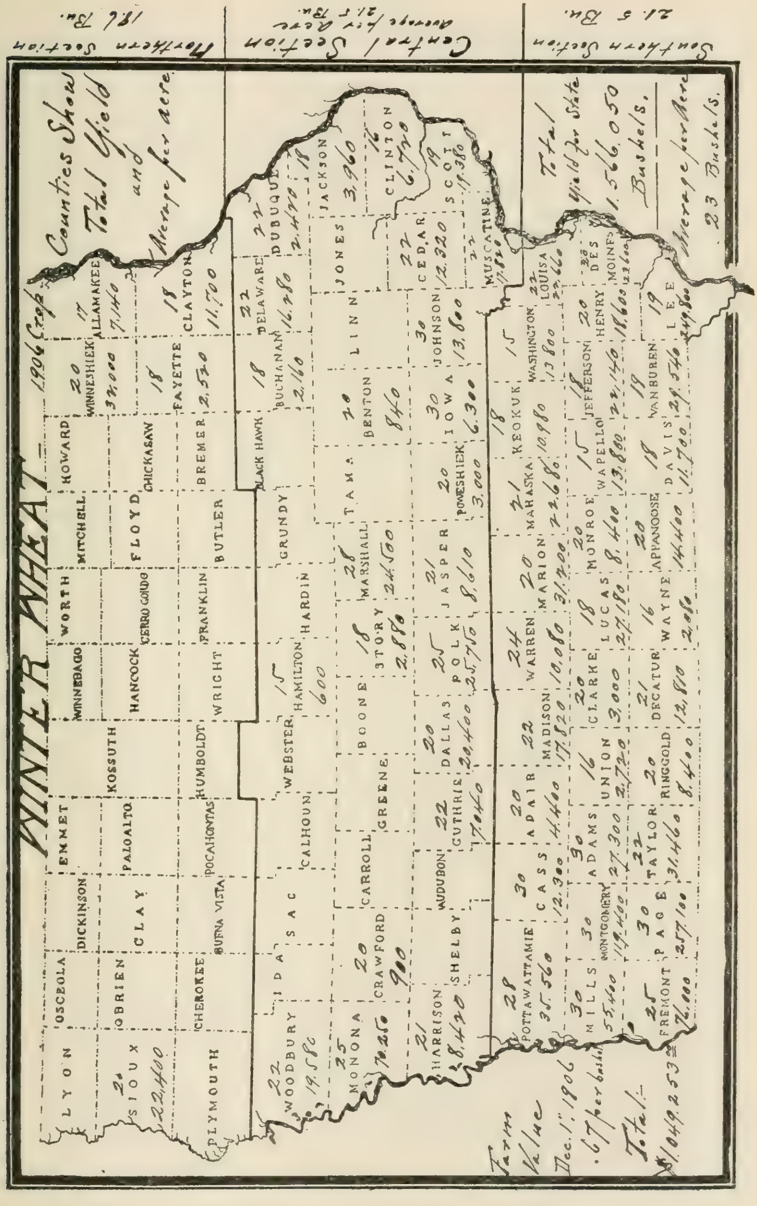
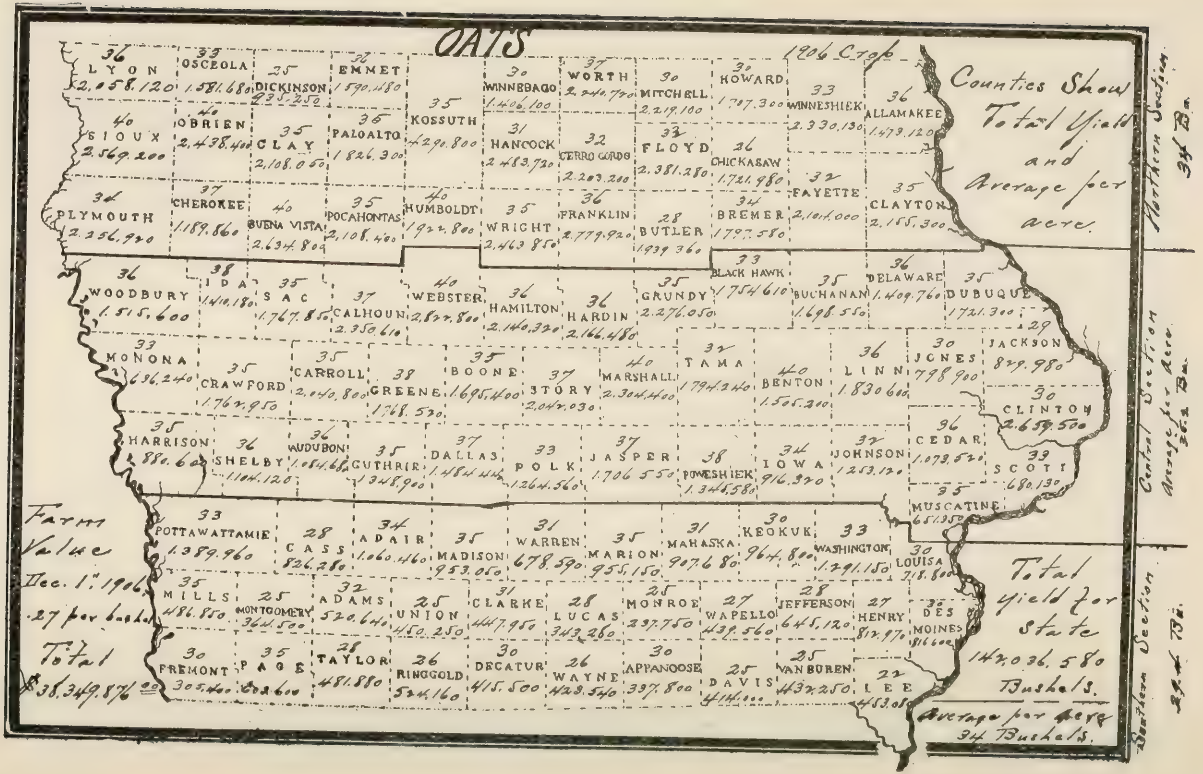
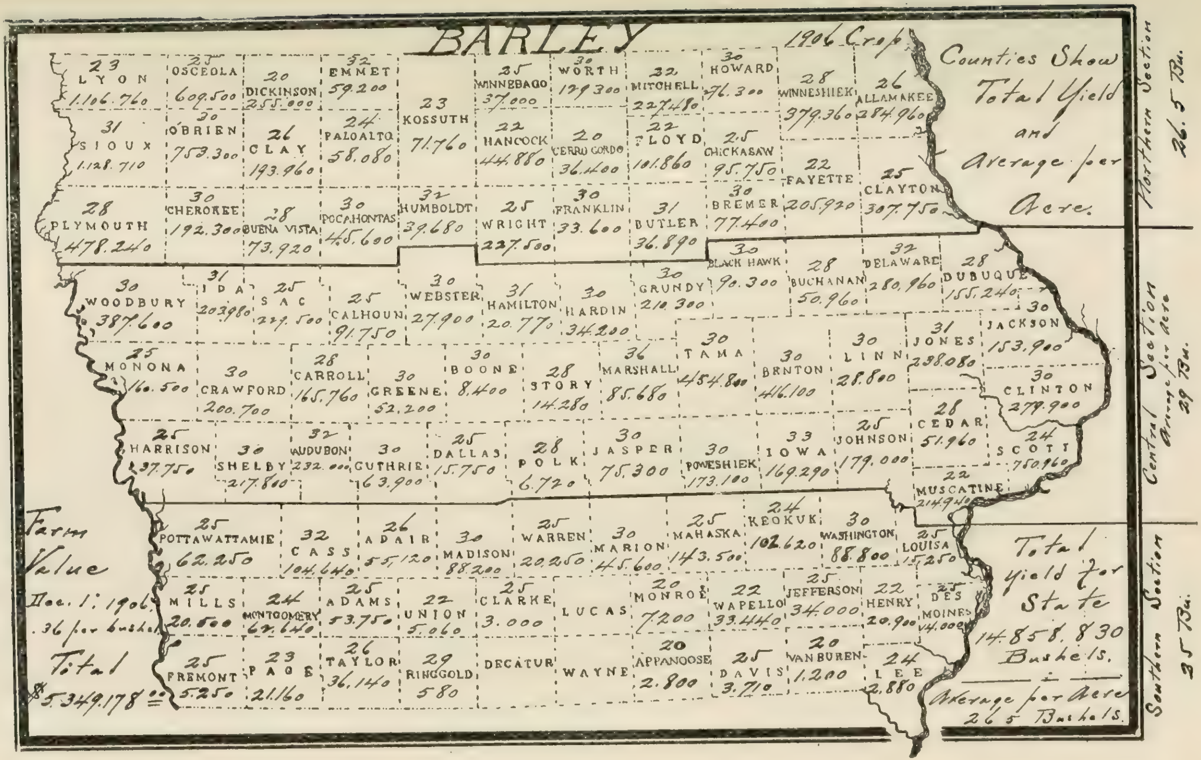
COUNTIES	Spring Wheat		Spring Wheat		Corn		Oats		Rye		Barley		Flax Seed		Potatoes		Hay (Tame)		Hay (Wild)	
	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Bushels per acre	Total bushels	Tons per acre	Total tons	Tons per acre	Total tons
Poweshiek	20	3,000	16	19,680	45	4,837,950	38	1,345,580	20	2,400	29	580	----	-------	80	49,600	1.1	52,930	1.0	410
Ringgold	20	8,400	18	3,860	36	2,697,200	26	524,160	18	3,780	30	173,100	----	-------	90	93,600	1.2	57,660	1.0	1,060
Sac	----	-------	12	25,320	35	4,202,800	35	1,767,850	15	1,050	25	229,500	----	-------	85	92,650	1.5	48,910	1.5	18,720
Scott	19	19,380	14	25,480	43	3,445,160	33	680,130	18	18,720	24	750,960	----	-------	120	482,400	1.4	43,030	1.3	5,340
Shelby	----	-------	12	181,440	40	4,899,200	36	1,104,120	30	217,800	16	3,040	----	-------	110	118,800	1.2	42,370	1.2	4,480
Sioux	20	22,400	16	516,960	46	6,910,580	40	2,569,200	15	600	31	1,128,710	10	650	120	181,200	1.8	30,230	1.4	28,160
Story	18	2,880	14	13,580	45	5,434,200	37	2,042,030	16	4,640	28	14,280	----	-------	90	88,200	1.3	39,230	1.0	12,120
Tama	----	-------	13	37,830	44	5,394,840	32	1,794,240	20	23,400	30	454,800	----	-------	80	136,800	1.6	96,190	1.5	6,310
Taylor	22	31,460	----	-------	37	3,183,850	28	481,880	20	7,200	26	36,140	----	-------	102	63,240	1.5	67,780	1.5	1,570
Union	16	2,720	----	-------	38	2,387,540	25	450,250	18	1,440	22	5,060	----	-------	90	70,200	1.0	45,640	1.0	970
Van Buren	19	29,540	10	1,200	43	2,309,530	25	432,250	13	28,210	20	1,200	----	-------	50	28,000	1.2	58,410	1.0	210
Wapello	15	13,800	----	-------	38	2,384,120	27	439,560	15	30,600	22	33,440	----	-------	65	63,700	1.4	51,220	1.0	180
Warren	24	10,080	16	14,560	42	3,871,140	31	678,590	20	4,200	25	20,250	----	-------	93	81,840	1.4	59,230	1.2	210
Washington	15	13,800	12	1,440	38	3,853,960	33	1,291,150	14	19,040	30	88,800	----	-------	90	71,100	1.3	51,360	1.0	160
Wayne	16	2,080	----	-------	33	2,313,630	26	423,540	16	4,240	----	-------	----	-------	95	45,600	1.0	70,140	1.0	120
Webster	----	-------	16	45,120	42	4,713,660	40	2,822,800	18	3,240	30	27,900	12	6,720	80	85,600	1.8	48,970	1.5	46,210
Winnebago	----	-------	15	64,200	40	2,204,440	30	1,406,100	----	-------	25	37,000	10	5,600	100	61,000	1.5	26,260	1.0	25,160
Winneshiek	20	32,000	12	34,840	38	2,854,560	33	2,330,130	15	4,200	28	379,360	12	32,520	110	119,900	1.6	75,380	1.0	5,910
Woodbury	22	19,580	15	293,600	45	8,153,550	36	1,515,600	20	13,400	30	387,600	----	-------	105	159,600	1.9	41,050	1.5	23,620
Worth	----	-------	15	31,350	38	1,543,560	37	2,240,720	16	640	30	129,300	10	24,900	100	74,000	1.8	44,590	1.2	18,970
Wright	----	-------	16	33,920	44	4,369,640	35	2,463,850	17	2,720	25	227,500	9	3,060	110	89,100	1.8	46,270	1.5	29,940
Total for State	----	1,566,050	----	5,603,880	----	388,348,920	----	142,036,580	----	1,093,160	----	14,858,830	----	205,280	----	11,697,500	----	4,892,950	----	1,110,690
Average per acre	23	-------	14	-------	41	-------	34	-------	17.5	-------	26.5	-------	10.7	-------	101	-------	1.3	-------	1.2	-------

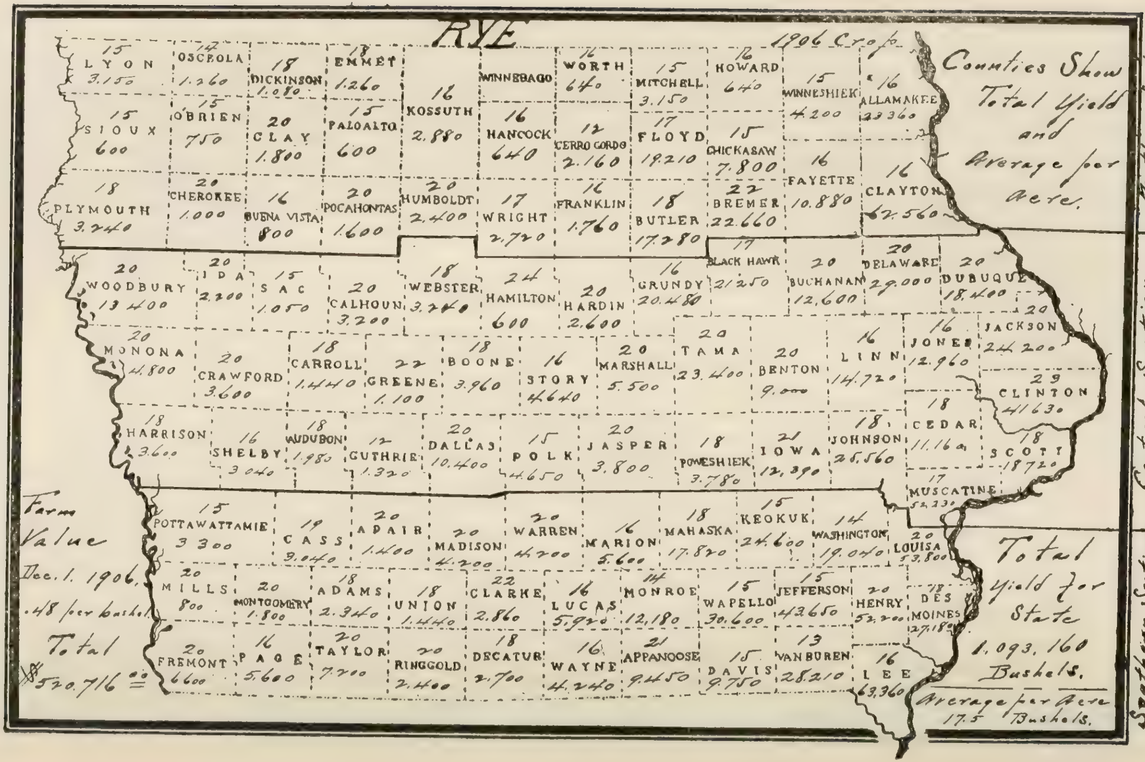

CORN
1906 Crop
Counties Show Total Yield and Average per Acre.
Northern Section 40 Bu.
Central Section Average per Acre 43 Bu.
Southern Section 38.6 Bu.
Total yield for State 388,348,970 Bushels.
Average per Acre 41 Bushels.
Farm Value Dec. 1st 1906, 33 per bushel. Total $128,155,143.00
LYON 40 3,957,600
OSCEOLA 36 2,069,280
DICKINSON 34 1,464,600
EMMET 38 2,077,140
KOSSUTH 40 5,682,800
WINNEBAGO 40 2,204,440
WORTH 38 1,543,560
MITCHELL 36 2,088,720
HOWARD 32 1,842,080
WINNESHIEK 38 2,854,560
ALLAMAKEE 46 2,578,300
SIOUX 46 6,910,580
O'BRIEN 37 3,844,990
CLAY 38 3,378,960
PALOALTO 37 3,053,350
HANCOCK 35 3,087,350
CERRO GORDO 40 3,690,800
FLOYD 36 3,329,200
CHICKASAW 37 2,393,160
FAYETTE 42 3,911,040
CLAYTON 45 3,407,900
PLYMOUTH 43 7,315,160
CHEROKEE 41 4,589,620
BUENA VISTA 45 4,703,850
POCAHONTAS 40 3,744,400
HUMBOLDT 45 3,339,450
WRIGHT 44 4,359,640
FRANKLIN 42 4,469,220
BUTLER 40 4,408,800
BREMER 45 2,826,900
BLACK HAWK 45 4,673,300
BUCHANAN 43 3,991,260
DELAWARE 45 4,061,700
DUBUQUE 40 2,816,400
JACKSON 45 2,549,900
JONES 45 3,898,850
CLINTON 45 5,440,960
WOODBURY 45 8,153,550
IDA 42 4,026,440
SAC 35 4,200,800
CALHOUN 42 4,617,800
WEBSTER 42 4,713,660
HAMILTON 42 4,827,140
HARDIN 44 4,709,460
GRUNDY 43 4,445,870
TAMA 44 5,394,840
BENTON 47 4,494,610
LINN 43 5,046,480
CEDAR 48 5,194,080
SCOTT 43 3,445,160
MONONA 41 5,374,850
CRAWFORD 44 6,171,440
CARROLL 42 4,848,380
GREENE 40 4,494,200
BOONE 45 4,986,900
STORY 45 5,434,200
MARSHALL 48 5,826,400
HARRISON 40 5,606,400
SHELBY 40 4,899,200
AUDUBON 44 4,207,720
GUTHRIE 39 3,713,190
DALLAS 45 5,580,900
POLK 46 5,457,900
JASPER 48 6,738,240
POWESHIEK 45 4,837,950
IOWA 40 3,617,200
JOHNSON 46 4,867,720
MUSCATINE 42
POTTAWATTAMIE 40 8,724,800
CASS 35 4,107,350
ADAIR 42 4,162,600
MADISON 44 3,920,840
WARREN 42 3,871,140
MARION 43 4,328,520
MAHASKA 42 4,589,340
KEOKUK 39 3,993,990
WASHINGTON 38 3,863,960
LOUISA 35 2,555,300
MILLS 41 4,022,920
MONTGOMERY 40 3,168,480
ADAMS 45 3,380,400
UNION 38 2,387,540
CLARKE 36 1,955,880
LUCAS 37 1,607,400
MONROE 38
WAPELLO 38 2,384,120
JEFFERSON 35 2,871,150
HENRY 40 2,853,400
DES MOINES 36 2,234,360
FREMONT 40 4,805,600
PAGE 42 4,965,240
TAYLOR 37 3,183,800
RINGGOLD 36 2,697,200
DECATUR 36 2,416,300
WAYNE 33 2,313,630
APPANOOSE 34 1,905,700
DAVIS 35 2,111,900
VAN BUREN 43 2,309,530
LEE 40 2,604,800


SPRING WHEAT
1906 Crop
Counties Show Total Yield and Average per Acre.
Northern Section 14.6 Bu.
Central Section Average per Acre 15 Bu.
Southern Section 15.2 Bu.
Total Yield for State 5,609,880 Bushels.
Average per Acre 14 Bushels
Farm Value Dec. 1, 1906 .69 per bushel
Total $3,530,444.00
LYON 13 238,880
OSCEOLA 12 49,440
DICKINSON 16 34,080
EMMET 15 12,300
KOSSUTH 15 51,300
WINNEBAGO 15 64,200
WORTH 15 31,350
MITCHELL 12 11,640
HOWARD 14 4,340
WINNESHIEK 12 34,840
ALLAMAKEE 15 26,300
SIOUX 16 516,960
O'BRIEN 14 84,420
CLAY 15 19,950
PALO ALTO 14 16,380
HANCOCK 14 26,740
CERRO GORDO 13 10,270
FLOYD 12 2,160
CHICKASAW 12 7,560
FAYETTE 14 19,740
CLAYTON 16 38,720
PLYMOUTH 16 802,400
CHEROKEE 16 82,560
BUENA VISTA 15 22,050
POCAHONTAS 17 18,360
HUMBOLDT 18 57,760
WRIGHT 16 33,920
FRANKLIN 15 19,650
BUTLER 15 4,650
BREMER 20 6,400
BLACK HAWK 16 6,720
BUCHANAN 16 2,080
DELAWARE
DUBUQUE 16 23,360
JACKSON 14 18,700
CLINTON 14 17,360
JONES 14 8,170
LINN 12 25,320
CEDAR 16 9,760
SCOTT 14 26,480
MUSCATINE 16 6,700
JOHNSON 20 5,800
BENTON 18 14,040
TAMA 13 37,830
IOWA 18 12,580
POWESHIEK 16 19,680
GRUNDY 15 14,700
HARDIN 16 37,920
MARSHALL 15 27,600
JASPER 14 6,220
STORY 14 13,580
POLK 17 25,670
HAMILTON 15 27,300
BOONE 13 23,660
DALLAS 16 34,880
WEBSTER 16 45,120
GREENE 13 9,230
GUTHRIE 13 60,840
CALHOUN 17 30,770
CARROLL 16 97,920
AUDUBON 17 18,180
SAC 12 25,320
IDA 14 21,940
WOODBURY 15 293,600
MONONA 13 159,510
CRAWFORD 14 254,660
HARRISON 16 332,960
SHELBY 12 181,440
POTTAWATTAMIE 14 320,740
CASS 15 14,460
ADAIR 16 66,960
MADISON 18 22,140
WARREN 16 14,560
MARION 15 18,150
MAHASKA 18 14,580
KEOKUK 17 8,640
WASHINGTON 12 1,440
LOUISA 17 3,570
DES MOINES 3,900
HENRY
JEFFERSON
VAN BUREN 10 1,200
LEE
DAVIS
WAPELLO
MONROE 18 14,500
LUCAS 15 13,800
CLARKE
UNION
ADAMS 18 12,440
MONTGOMERY 12 109,680
MILLS 16 65,760
FREMONT 15 23,550
PAGE 15 33,150
TAYLOR
RINGGOLD 18 3,860
DECATUR
WAYNE
APPANOOSE


Northern Section
18.6 Bu.
Central Section
Average per Acre
21.5 Bu.
Southern Section
21.5 Bu.
WINTER WHEAT — 1906 Crop
Counties Show Total Yield and Average per acre.
Total Yield for State 1,556,050 Bushels.
Average per Acre . 23 Bushels.
Farm Value Dec. 1st 1906 .67 per bushel
Total: $1,049,253.00
LYON
OSCEOLA
DICKINSON
EMMET
KOSSUTH
WINNEBAGO
WORTH
MITCHELL
HOWARD
WINNESHIEK 20 32,000
ALLAMAKEE 17 7,140
SIOUX 20 22,400
OBRIEN
CLAY
PALOALTO
HANCOCK
CERRO GORDO
FLOYD
CHICKASAW
FAYETTE 18 2,520
CLAYTON 18 11,700
PLYMOUTH
CHEROKEE
BUENA VISTA
POCAHONTAS
HUMBOLDT
WRIGHT
FRANKLIN
BUTLER
BREMER
WOODBURY 22 19,580
IDA
SAC
CALHOUN
WEBSTER
HAMILTON 15 600
HARDIN
GRUNDY
BLACK HAWK
BUCHANAN 18 2,160
DELAWARE 22 16,480
DUBUQUE 22 2,470
JACKSON 18 3,960
CLINTON 16 6,720
MONONA 25 10,250
CRAWFORD 20 900
CARROLL
GREENE
BOONE
STORY 18 2,880
MARSHALL 28 24,500
TAMA
BENTON 20 840
LINN
JONES
CEDAR 22 12,320
SCOTT 19 11,380
HARRISON 21 18,420
SHELBY
AUDUBON
GUTHRIE 22 7,040
DALLAS 20 20,400
POLK 25 25,750
JASPER 21 8,610
POWESHIEK 20 3,000
IOWA 30 6,300
JOHNSON 30 13,800
MUSCATINE 22 17,820
POTTAWATTAMIE 28 35,560
CASS 30 12,300
ADAIR 20 4,400
MADISON 22 17,820
WARREN 24 10,080
MARION 20 31,200
MAHASKA 21 22,680
KEOKUK 18 10,980
WASHINGTON 15 13,800
LOUISA 22 22,660
MILLS 30 55,400
MONTGOMERY 30 19,400
ADAMS 30 27,300
UNION 16 2,720
CLARKE 20 3,000
LUCAS 18 27,180
MONROE 20 8,400
WAPELLO 15 13,880
JEFFERSON 18 22,140
HENRY 20 18,600
DES MOINES 20 23,600
FREMONT 25 72,000
PAGE 30 257,100
TAYLOR 22 31,460
RINGGOLD 20 8,400
DECATUR 21 12,810
WAYNE 16 2,080
APPANOOSE 20 14,400
DAVIS 18 11,700
VAN BUREN 19 29,570
LEE 19 249,800


OATS
1906 Crop
Counties Show Total Yield and Average per acre.
Northern Section 34 Bu.
Central Section Average per Acre 36.2 Bu.
Southern Section 31.4 Bu.
Total yield for State 142,036,580 Bushels.
Average per Acre 34 Bushels.
Farm Value Dec. 1st 1906, .27 per bushel Total $38,349,876.00
36 LYON 2,058.120
33 OSCEOLA 1.581.680
25 DICKINSON 935.250
32 EMMET 1.590.480
35 KOSSUTH 4.290.800
30 WINNEBAGO 1.406.100
37 WORTH 2.240.720
30 MITCHELL 2.219.100
30 HOWARD 1.707.300
33 WINNESHIEK 2.330.130
36 ALLAMAKEE 1.473.120
40 SIOUX 2.569.200
40 OBRIEN 2,438.400
35 CLAY 2,108.050
36 PALOALTO 1.826.300
31 HANCOCK 2.483.720
32 CERRO GORDO 2.203.200
32 FLOYD 2.381.280
36 CHICKASAW 1.721.980
32 FAYETTE 2,104.000
35 CLAYTON 2,155,300
34 PLYMOUTH 2.256,920
37 CHEROKEE 1.189.860
40 BUENA VISTA 2.634.800
35 POCAHONTAS 2,108.400
40 HUMBOLDT 1922.800
35 WRIGHT 2,463 850
36 FRANKLIN 2.779.920
28 BUTLER 1.939 360
34 BREMER 1797.580
36 WOODBURY 1.515,600
38 IDA 1,410,180
35 SAC 1.767.850
37 CALHOUN 2.350.610
40 WEBSTER 2.822.800
36 HAMILTON 2.140,320
36 HARDIN 2.166.480
35 GRUNDY 2.276.050
33 BLACK HAWK 1754610
35 BUCHANAN 1.698.550
36 DELAWARE 1.409.760
35 DUBUQUE 1721.300
29 JACKSON 829.980
33 MONONA 696,240
35 CRAWFORD 1.762.950
35 CARROLL 2,040,800
38 GREENE 1768.520
35 BOONE 1.695.400
37 STORY 2.042.030
40 MARSHALL 2.304.400
32 TAMA 1794.240
40 BENTON 1.505.200
36 LINN 1.830 600
30 JONES 798 900
30 CLINTON 2.659.500
35 HARRISON 880.600
36 SHELBY 1.104.120
36 AUDUBON 1.054.68
35 GUTHRIE 1348,900
37 DALLAS 1.484 444
33 POLK 1.264.560
37 JASPER 1.706 550
38 POWESHIEK 1.345,580
34 IOWA 916,320
32 JOHNSON 1253.120
36 CEDAR 1.073.520
33 SCOTT 680.130
35 MUSCATINE 651.350
33 POTTAWATTAMIE 1.389.960
28 CASS 826.280
34 ADAIR 1.060.460
35 MADISON 953.050
31 WARREN 678.590
35 MARION 955.150
31 MAHASKA 907.680
30 KEOKUK 964.800
33 WASHINGTON 1.291.150
30 LOUISA 718.800
35 MILLS 486.850
25 MONTGOMERY 364.500
32 ADAMS 520.640
25 UNION 450.250
31 CLARKE 447.950
28 LUCAS 343.260
25 MONROE 297.750
27 WAPELLO 439.560
28 JEFFERSON 645,120
27 HENRY 812.970
30 DES MOINES 816 600
30 FREMONT 305,400
35 PAGE 602.600
28 TAYLOR 481.880
26 RINGGOLD 524.160
30 DECATUR 415.500
26 WAYNE 423.540
30 APPANOOSE 397.800
25 DAVIS 414.000
25 VAN BUREN 432,250
22 LEE 453.0


BARLEY
1906 Crop
Counties Show Total Yield and Average per Acre.
Northern Section 26.5 Bu.
Central Section Average per Acre 29 Bu.
Southern Section 25 Bu.
Total Yield for State 14.858.830 Bushels.
Average per Acre 26.5 Bushels.
Farm Value Dec. 1: 1906. .36 per bushel Total $5.349.178.00
23 LYON 1.106.760
25 OSCEOLA 609.500
20 DICKINSON 255.000
32 EMMET 59.200
23 KOSSUTH 71.760
25 WINNEBAGO 37.000
30 WORTH 129.300
32 MITCHELL 227.480
30 HOWARD 76.300
28 WINNESHIEK 379.360
26 ALLAMAKEE 284.960
31 SIOUX 1.128.710
30 O'BRIEN 753.300
26 CLAY 193.960
24 PALOALTO 58.080
22 HANCOCK 44.880
20 CERRO GORDO 36.400
22 FLOYD 101.860
25 CHICKASAW 95.750
22 FAYETTE 205.920
25 CLAYTON 307.750
28 PLYMOUTH 478.240
30 CHEROKEE 192.300
28 BUENA VISTA 73.920
30 POCAHONTAS 45.600
32 HUMBOLDT 39.680
25 WRIGHT 227.500
30 FRANKLIN 33.600
31 BUTLER 36.890
30 BREMER 77.400
30 BLACK HAWK 90.300
28 BUCHANAN 50.960
32 DELAWARE 280.960
28 DUBUQUE 155.240
30 WOODBURY 387.600
31 IDA 203980
25 SAC 229.500
25 CALHOUN 91.750
30 WEBSTER 27.900
31 HAMILTON 20.770
30 HARDIN 34.200
30 GRUNDY 210.300
30 TAMA 454.800
30 BENTON 416.100
30 LINN 28.800
31 JONES 238.080
30 JACKSON 153.900
25 MONONA 160.500
30 CRAWFORD 200.700
28 CARROLL 165.760
30 GREENE 52.200
30 BOONE 8.400
28 STORY 14.280
36 MARSHALL 85.680
30 CLINTON 279.900
28 CEDAR 51.960
25 HARRISON 37.750
30 SHELBY 217.800
32 AUDUBON 232.000
30 GUTHRIE 163.900
25 DALLAS 15.750
28 POLK 6.720
30 JASPER 75.300
30 POWESHIEK 173.100
33 IOWA 169.290
25 JOHNSON 179.000
24 SCOTT 750.960
22 MUSCATINE 214.940
25 POTTAWATTAMIE 62.250
32 CASS 104.640
26 ADAIR 55.120
30 MADISON 88.200
25 WARREN 20.250
30 MARION 45.600
25 MAHASKA 143.500
24 KEOKUK 102.620
30 WASHINGTON 88.800
25 LOUISA 15.250
25 MILLS 20.500
24 MONTGOMERY 62.640
25 ADAMS 53.750
22 UNION 5.060
25 CLARKE 3.000
LUCAS
20 MONROE 7.200
22 WAPELLO 33.440
25 JEFFERSON 34.000
22 HENRY 20.900
25 DES MOINES 14.000
25 FREMONT 5.250
23 PAGE 21.160
26 TAYLOR 36.140
29 RINGGOLD 580
DECATUR
WAYNE
20 APPANOOSE 2.800
25 DAVIS 3.710
20 VAN BUREN 1.200
24 LEE 2.880


RYE
1906 Crop.
LYON 15 3.150
OSCEOLA 14 1.260
DICKINSON 18 1.080
EMMET 18 1.260
KOSSUTH 16 2.880
WINNEBAGO
WORTH 16 640
MITCHELL 15 3.150
HOWARD 16 640
WINNESHIEK 15 4.200
ALLAMAKEE 16 23360
SIOUX 15 600
O'BRIEN 15 750
CLAY 20 1.800
PALOALTO 15 600
HANCOCK 16 640
CERRO GORDO 12 2.160
FLOYD 17 19.210
CHICKASAW 15 7.800
FAYETTE 16 10.880
CLAYTON 16 42.560
PLYMOUTH 18 3.240
CHEROKEE 20 1.000
BUENA VISTA 16 800
POCAHONTAS 20 1.600
HUMBOLDT 20 2.400
WRIGHT 17 2.720
FRANKLIN 16 1.760
BUTLER 18 17.280
BREMER 22 22.660
WOODBURY 20 13.400
IDA 20 2.200
SAC 15 1.050
CALHOUN 20 3.200
WEBSTER 18 3.240
HAMILTON 24 600
HARDIN 20 2.600
GRUNDY 16 20.480
BLACK HAWK 17 21.250
BUCHANAN 20 12.600
DELAWARE 20 29.000
DUBUQUE 20 18.400
MONONA 20 4.800
CRAWFORD 20 3.600
CARROLL 18 1.440
GREENE 22 1.100
BOONE 18 3.960
STORY 16 4640
MARSHALL 20 5.500
TAMA 20 23.400
BENTON 20 9.000
LINN 16 14.720
JONES 16 12.960
JACKSON 20 24.200
CLINTON 29 41630
HARRISON 18 3.600
SHELBY 16 3040
AUDUBON 18 1.980
GUTHRIE 12 1.320
DALLAS 20 10.400
POLK 15 4.650
JASPER 20 3.800
POWESHIEK 18 3.780
IOWA 21 12.390
JOHNSON 18 25.560
CEDAR 18 11.160
SCOTT 18 18720
MUSCATINE 17 52.230
POTTAWATTAMIE 15 3300
CASS 19 9.040
ADAIR 20 1.400
MADISON 20 4.200
WARREN 20 4.200
MARION 16 5.600
MAHASKA 18 17.820
KEOKUK 15 24.600
WASHINGTON 14 19.040
LOUISA 20 53.800
MILLS 20 800
MONTGOMERY 20 1.800
ADAMS 18 2.340
UNION 18 1.440
CLARKE 22 2.860
LUCAS 16 5.920
MONROE 14 12,180
WAPELLO 15 30.600
JEFFERSON 15 42650
HENRY 20 52.200
DES MOINES 18 27.180
FREMONT 20 6600
PAGE 16 5.600
TAYLOR 20 7.700
RINGGOLD 20 2.400
DECATUR 18 2.700
WAYNE 16 4.240
APPANOOSE 21 9.450
DAVIS 15 9.750
VAN BUREN 13 28.210
LEE 16 63,360

Counties Show Total Yield and Average per Acre.

Total Yield for State 1,093,160 Bushels.

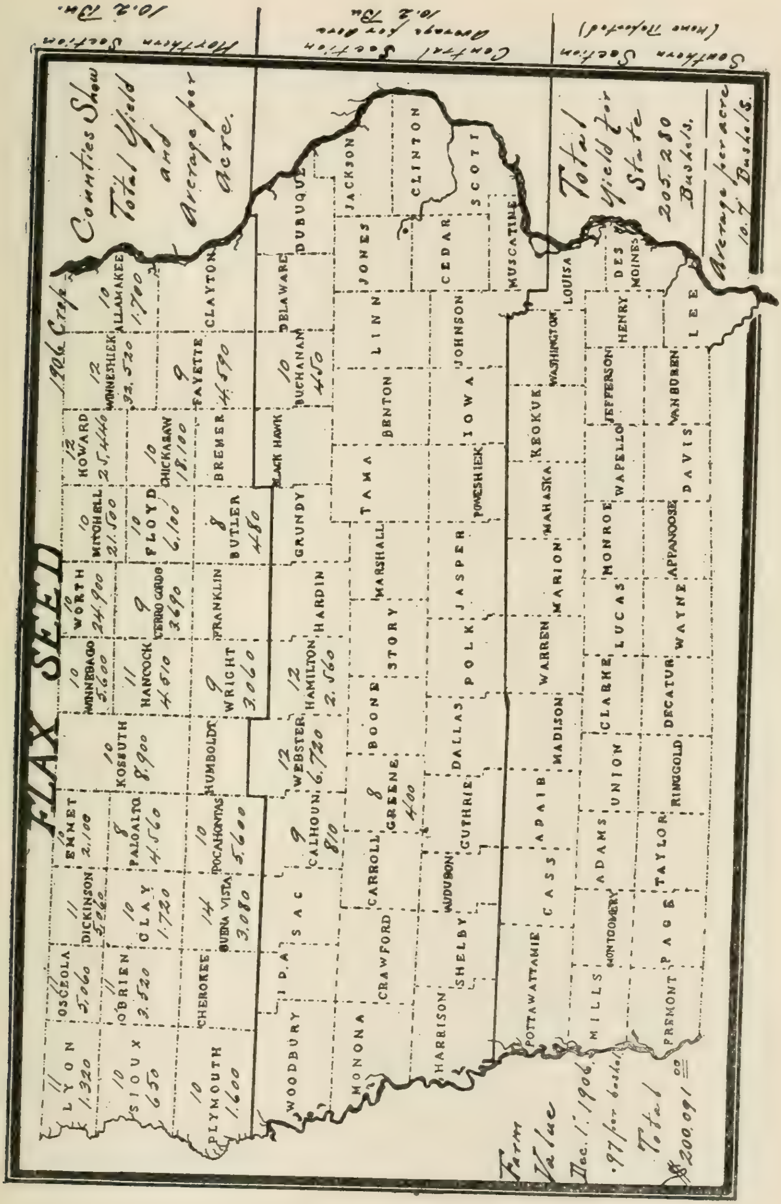
Average per Acre 17.5 Bushels.

Farm Value Dec. 1. 1906. .48 per bushel. Total $520.716.00

Northern Section 16.7 Bu.

Central Section Average per Acre 18.6 Bu.

Southern Section 17.7 Bu.



FLAX SEED

1906 Crop

Counties Show Total Yield and Average per Acre.

Northern Section 10.2 Bu.

Central Section Average per Acre 10.2 Bu.

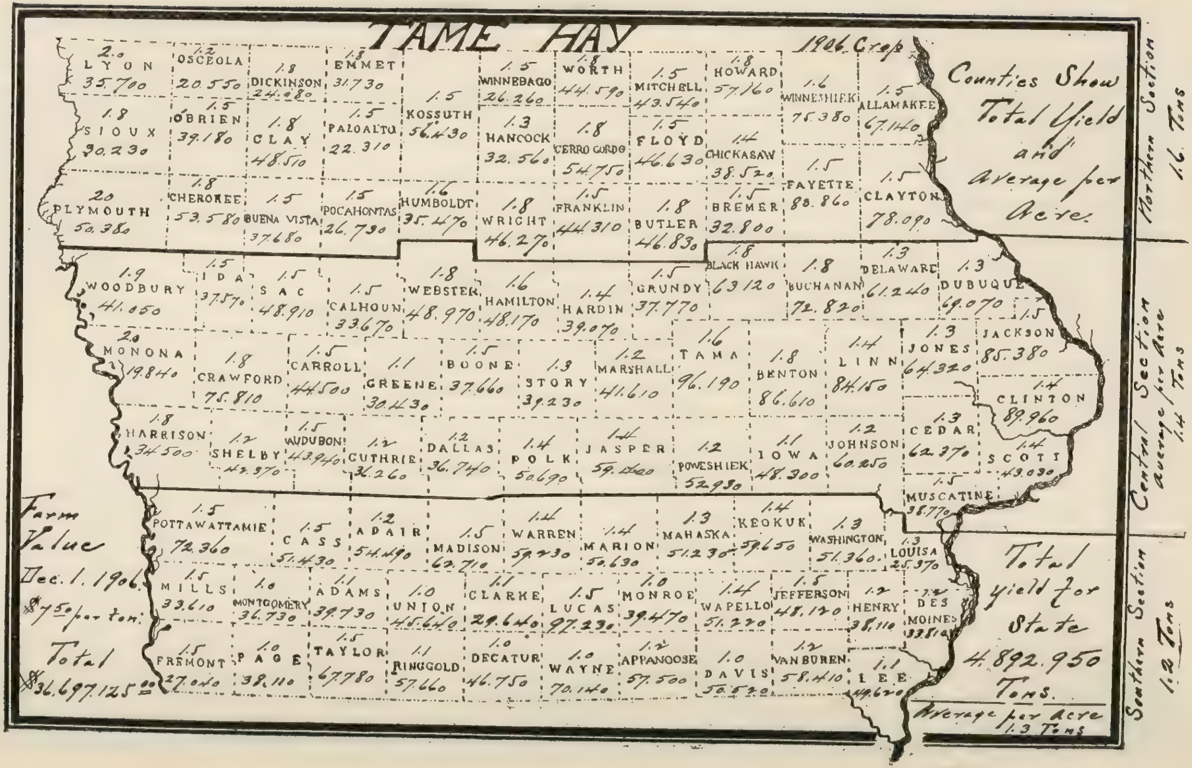
Southern Section (None Reported)

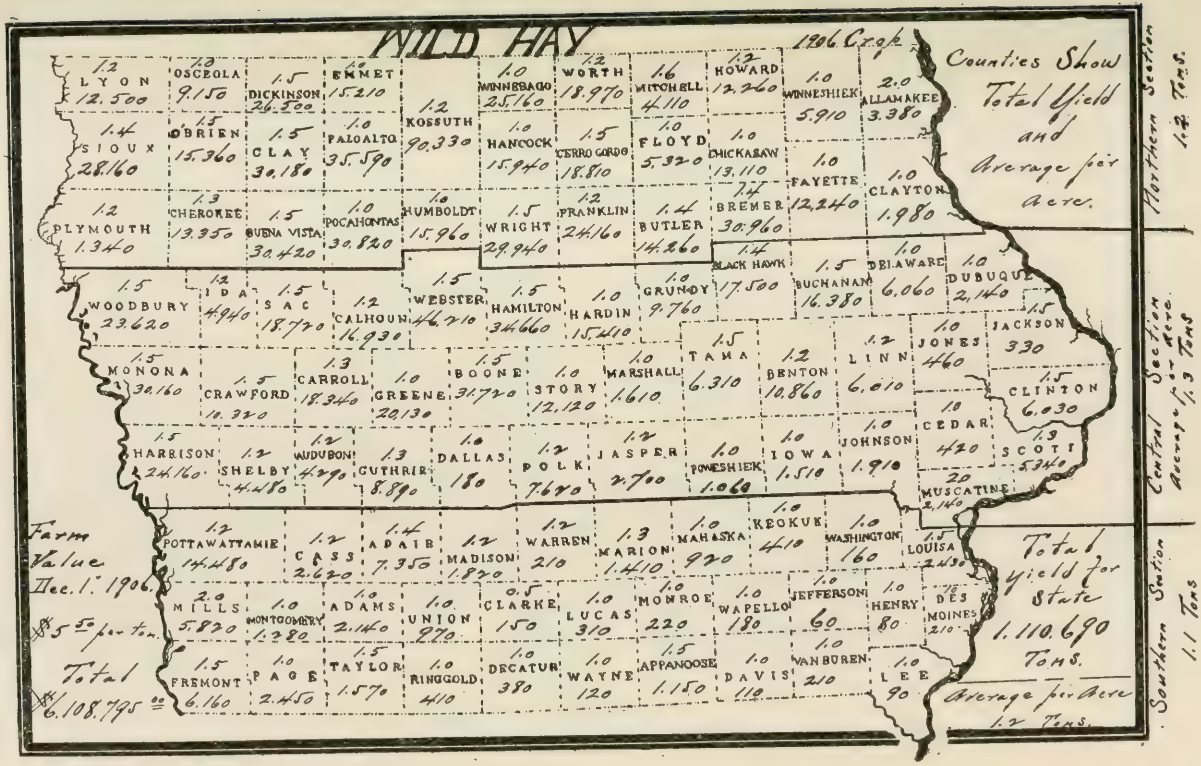
Total Yield for State 205,280 Bushels.

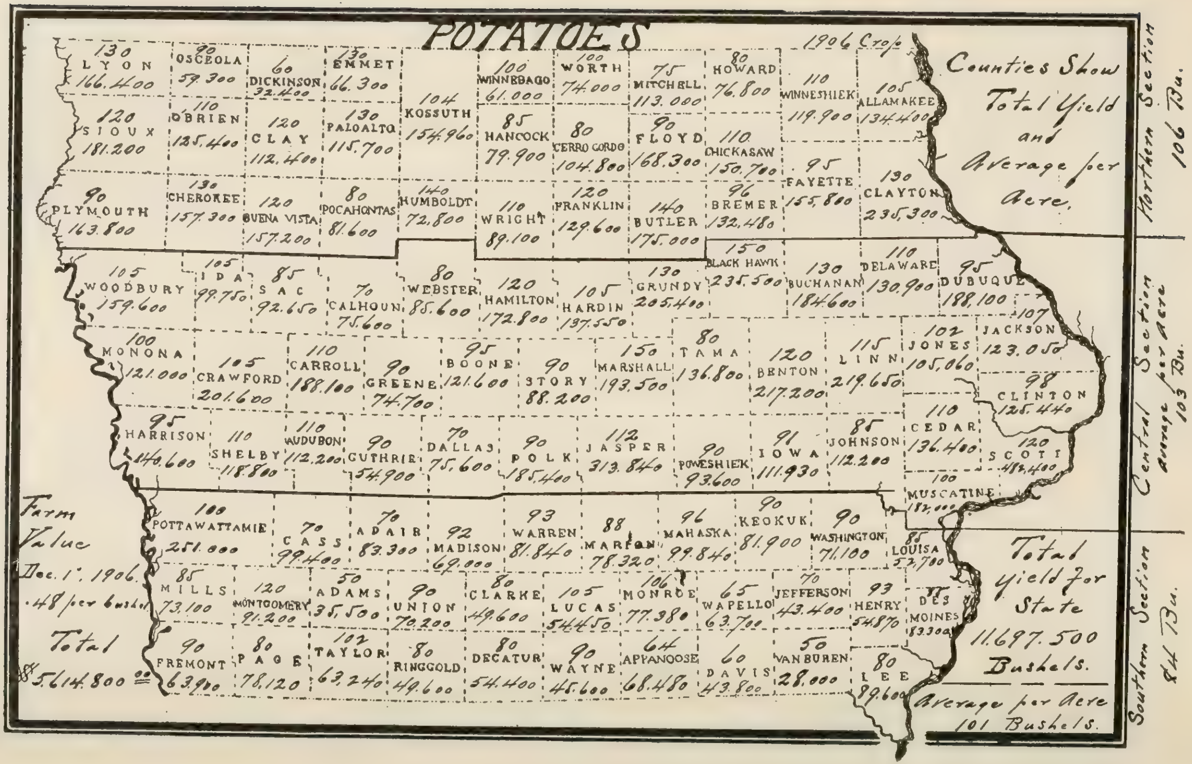
Average per acre 10.7 Bushels.

Farm Value Dec. 1, 1906. .97 per bushel Total $200,091.00

LYON 11 1,320
OSCEOLA 11 5,060
DICKINSON 11 5,060
EMMET 10 2,100
KOSSUTH 10 8,900
WINNEBAGO 10 5,600
WORTH 10 24,900
MITCHELL 10 21,500
HOWARD 12 25,440
WINNESHIEK 12 32,520
ALLAMAKEE 10 1,700
SIOUX 10 650
O'BRIEN 11 3,520
CLAY 10 1,720
PALO ALTO 8 4,560
HANCOCK 11 4,510
CERRO GORDO 9 3,690
FLOYD 10 6,100
CHICKASAW 10 18,100
FAYETTE 9 4,590
CLAYTON
PLYMOUTH 10 1,600
CHEROKEE
BUENA VISTA 14 3,080
POCAHONTAS 10 5,600
HUMBOLDT
WRIGHT 9 3,060
FRANKLIN
BUTLER 8 480
BREMER
BLACK HAWK
BUCHANAN 10 450
DELAWARE
DUBUQUE
WOODBURY
IDA
SAC
CALHOUN 9 810
WEBSTER 12 6,720
HAMILTON 12 2,560
HARDIN
GRUNDY
MONONA
CRAWFORD
CARROLL
GREENE 8 400
BOONE
STORY
MARSHALL
TAMA
BENTON
LINN
JONES
JACKSON
CLINTON
HARRISON
SHELBY
AUDUBON
GUTHRIE
DALLAS
POLK
JASPER
POWESHIEK
IOWA
JOHNSON
CEDAR
SCOTT
MUSCATINE
POTTAWATTAMIE
CASS
ADAIR
MADISON
WARREN
MARION
MAHASKA
KEOKUK
WASHINGTON
LOUISA
MILLS
MONTGOMERY
ADAMS
UNION
CLARKE
LUCAS
MONROE
WAPELLO
JEFFERSON
HENRY
DES MOINES
FREMONT
PAGE
TAYLOR
RINGGOLD
DECATUR
WAYNE
APPANOOSE
DAVIS
VAN BUREN
LEE


TAME HAY
1906 Crop
Counties Show Total Yield and Average per Acre.
Northern Section 1.6 Tons
Central Section Average per Acre 1.4 Tons
Southern Section 1.2 Tons
Total yield for State 4.892.950 Tons.
Average per Acre 1.3 Tons
Farm Value Dec. 1. 1906. $7.50 per ton. Total $36.697.125.00
2.0 LYON 35.700
1.2 OSCEOLA 20.550
1.8 DICKINSON 24.080
1.8 EMMET 31.730
1.5 KOSSUTH 56.430
1.5 WINNEBAGO 26.260
1.8 WORTH 44.590
1.5 MITCHELL 43.540
1.8 HOWARD 57.160
1.6 WINNESHIEK 75.380
1.5 ALLAMAKEE 67.140
1.8 SIOUX 30.230
1.5 O'BRIEN 39.180
1.8 CLAY 48.510
1.5 PALOALTO 22.310
1.3 HANCOCK 32.560
1.8 CERRO GORDO 54.750
1.5 FLOYD 46.630
1.4 CHICKASAW 38.520
1.5 FAYETTE 83.860
1.5 CLAYTON 78.090
2.0 PLYMOUTH 50.380
1.8 CHEROKEE 53.580
1.5 BUENA VISTA 37.680
1.5 POCAHONTAS 26.790
1.6 HUMBOLDT 35.470
1.8 WRIGHT 46.270
1.5 FRANKLIN 44.310
1.8 BUTLER 46.830
1.5 BREMER 32.800
1.9 WOODBURY 41.050
1.5 IDA 37.570
1.5 SAC 48.910
1.5 CALHOUN 33.670
1.8 WEBSTER 48.970
1.6 HAMILTON 48.170
1.4 HARDIN 39.070
1.5 GRUNDY 37.770
1.8 BLACK HAWK 63.120
1.8 BUCHANAN 72.820
1.3 DELAWARE 61.240
1.3 DUBUQUE 69.070
2.0 MONONA 19.840
1.8 CRAWFORD 75.810
1.5 CARROLL 44.500
1.1 GREENE 30.430
1.5 BOONE 37.660
1.3 STORY 39.230
1.2 MARSHALL 41.610
1.6 TAMA 96.190
1.8 BENTON 86.610
1.4 LINN 84.150
1.3 JONES 64.320
1.5 JACKSON 85.380
1.4 CLINTON 89.960
1.8 HARRISON 34.500
1.2 SHELBY 42.970
1.5 AUDUBON 43.940
1.2 GUTHRIE 32.260
1.2 DALLAS 36.740
1.4 POLK 50.690
1.4 JASPER 59.400
1.2 POWESHIEK 52.930
1.1 IOWA 48.300
1.2 JOHNSON 60.250
1.3 CEDAR 62.370
1.4 SCOTT 43.030
1.5 MUSCATINE 38.770
1.5 POTTAWATTAMIE 72.360
1.5 CASS 51.430
1.2 ADAIR 54.490
1.5 MADISON 62.710
1.4 WARREN 59.430
1.4 MARION 50.630
1.3 MAHASKA 51.230
1.4 KEOKUK 59.650
1.3 WASHINGTON 51.360
1.3 LOUISA 25.370
1.5 MILLS 33.610
1.0 MONTGOMERY 36.730
1.1 ADAMS 39.730
1.0 UNION 45.640
1.1 CLARKE 29.640
1.5 LUCAS 97.230
1.0 MONROE 39.470
1.4 WAPELLO 51.220
1.5 JEFFERSON 48.120
1.2 HENRY 38.110
1.2 DES MOINES 33.810
1.5 FREMONT 27.040
1.0 PAGE 39.110
1.5 TAYLOR 67.780
1.1 RINGGOLD 57.660
1.0 DECATUR 46.750
1.0 WAYNE 70.140
1.2 APPANOOSE 57.500
1.0 DAVIS 50.520
1.2 VAN BUREN 58.410
1.1 LEE 49.620


WILD HAY
1906 Crop
Counties Show Total Yield and Average per acre.
Northern Section 1.2 Tons
Central Section Average per acre 1.3 Tons
Southern Section 1.1 Tons
Total yield for State 1.110.690 Tons.
Average per Acre 1.2 Tons.
Farm Value Dec. 1st 1906. $5.50 per ton. Total $6.108.795.00
1.2 LYON 12.500
1.0 OSCEOLA 9.150
1.5 DICKINSON 26.500
1.0 EMMET 15.210
1.2 KOSSUTH 90.330
1.0 WINNEBAGO 25.160
1.2 WORTH 18.970
1.6 MITCHELL 4.110
1.2 HOWARD 12.260
1.0 WINNESHIEK 5.910
2.0 ALLAMAKEE 3.380
1.4 SIOUX 28.160
1.5 O'BRIEN 15.360
1.5 CLAY 30.180
1.0 PALO ALTO 35.590
1.0 HANCOCK 15.940
1.5 CERRO GORDO 18.810
1.0 FLOYD 5.320
1.0 CHICKASAW 13.110
1.0 FAYETTE 12.240
1.0 CLAYTON 1.980
1.2 PLYMOUTH 1.340
1.3 CHEROKEE 13.350
1.5 BUENA VISTA 30.420
1.0 POCAHONTAS 30.820
1.0 HUMBOLDT 15.960
1.5 WRIGHT 29.940
1.2 FRANKLIN 24.160
1.4 BUTLER 14.260
1.4 BREMER 30.960
1.4 BLACK HAWK 17.500
1.5 BUCHANAN 16.380
1.0 DELAWARE 6.060
1.0 DUBUQUE 2.140
1.5 WOODBURY 23.620
1.2 IDA 4.940
1.5 SAC 18.720
1.2 CALHOUN 16.930
1.5 WEBSTER 46.710
1.5 HAMILTON 34.660
1.0 HARDIN 15.410
1.0 GRUNDY 9.760
1.5 TAMA 6.310
1.2 BENTON 10.860
1.2 LINN 6.010
1.0 JONES 460
1.5 JACKSON 330
1.5 CLINTON 6.030
1.5 MONONA 30.160
1.5 CRAWFORD 10.320
1.3 CARROLL 18.340
1.0 GREENE 20.130
1.5 BOONE 31.720
1.0 STORY 12.120
1.0 MARSHALL 1.610
1.5 HARRISON 24.160
1.2 SHELBY 4.480
1.2 AUDUBON 4.290
1.3 GUTHRIE 8.890
1.0 DALLAS 180
1.2 POLK 7.670
1.2 JASPER 2.700
1.0 POWESHIEK 1.060
1.0 IOWA 1.510
1.0 JOHNSON 1.910
1.0 CEDAR 420
1.3 SCOTT 5.340
2.0 MUSCATINE 2.140
1.2 POTTAWATTAMIE 14.480
1.2 CASS 2.620
1.4 ADAIR 7.350
1.2 MADISON 1.870
1.2 WARREN 210
1.3 MARION 1.410
1.0 MAHASKA 920
1.0 KEOKUK 410
1.0 WASHINGTON 160
1.5 LOUISA 2.430
2.0 MILLS 5.820
1.0 MONTGOMERY 1.280
1.0 ADAMS 2.140
1.0 UNION 970
0.5 CLARKE 150
1.0 LUCAS 310
1.0 MONROE 220
1.0 WAPELLO 180
1.0 JEFFERSON 60
1.0 HENRY 80
1.0 DES MOINES 210
1.5 FREMONT 6.160
1.0 PAGE 2.450
1.5 TAYLOR 1.570
1.0 RINGGOLD 410
1.0 DECATUR 380
1.0 WAYNE 120
1.5 APPANOOSE 1.150
1.0 DAVIS 110
1.0 VAN BUREN 210
1.0 LEE 90


POTATOES
1906 Crop
Counties Show Total Yield and Average per Acre.
130 LYON 166.400
90 OSCEOLA 59.300
60 DICKINSON 32.400
130 EMMET 66.300
104 KOSSUTH 154.960
100 WINNEBAGO 61.000
100 WORTH 74.000
75 MITCHELL 113.000
80 HOWARD 76.800
110 WINNESHIEK 119.900
105 ALLAMAKEE 134.400
120 SIOUX 181.200
110 O'BRIEN 125.400
120 CLAY 112.400
130 PALOALTO 115.700
85 HANCOCK 79.900
80 CERRO GORDO 104.800
90 FLOYD 168.300
110 CHICKASAW 150.700
95 FAYETTE 155.800
130 CLAYTON 235.300
90 PLYMOUTH 163.800
130 CHEROKEE 157.300
120 BUENA VISTA 157.200
80 POCAHONTAS 81.600
140 HUMBOLDT 72.800
110 WRIGHT 89.100
120 FRANKLIN 129.600
140 BUTLER 175.000
96 BREMER 132.480
150 BLACK HAWK 235.500
130 BUCHANAN 184.600
110 DELAWARE 130.900
95 DUBUQUE 188.100
105 WOODBURY 159.600
105 IDA 99.750
85 SAC 92.650
70 CALHOUN 75.600
80 WEBSTER 85.600
120 HAMILTON 172.800
105 HARDIN 137.550
130 GRUNDY 205.400
107 JACKSON 123.050
100 MONONA 121.000
105 CRAWFORD 201.600
110 CARROLL 188.100
90 GREENE 74.700
95 BOONE 121.600
90 STORY 88.200
150 MARSHALL 193.500
80 TAMA 136.800
120 BENTON 217.200
115 LINN 219.650
102 JONES 105.060
98 CLINTON 125.440
95 HARRISON 140.600
110 SHELBY 118.800
110 AUDUBON 112.200
90 GUTHRIE 54.900
70 DALLAS 75.600
90 POLK 185.400
112 JASPER 313.840
90 POWESHIEK 93.600
91 IOWA 111.930
85 JOHNSON 112.200
110 CEDAR 136.400
120 SCOTT 482,400
100 MUSCATINE 182,000
100 POTTAWATTAMIE 251.000
70 CASS 99.400
70 ADAIR 83.300
92 MADISON 69.000
93 WARREN 81.840
88 MARION 78.320
96 MAHASKA 99.840
90 KEOKUK 81.900
90 WASHINGTON 71.100
85 LOUISA 57,700
85 MILLS 73.100
120 MONTGOMERY 91.200
50 ADAMS 35.500
90 UNION 70.200
80 CLARKE 49.600
105 LUCAS 54450
106 MONROE 77.380
65 WAPELLO 63.700
70 JEFFERSON 43.400
93 HENRY 54870
77 DES MOINES 83300
90 FREMONT 63.900
80 PAGE 78.120
102 TAYLOR 63.240
80 RINGGOLD 49.600
80 DECATUR 54.400
90 WAYNE 45.600
64 APPANOOSE 68.480
60 DAVIS 43.800
50 VAN BUREN 28.000
80 LEE 89.600
Farm Value Dec. 1st. 1906. .48 per bushel
Total $5.614.800.00
Total yield for State 11.697.500 Bushels.
Average per Acre 101 Bushels.
Northern Section 106 Bu.
Central Section Average per Acre 103 Bu.
Southern Section 84 Bu.

PART III.

Proceedings of the State Farmers' Institute and Agricultural Convention

Held in the Rooms of the

Department of Agriculture

Des Moines, Iowa,

Tuesday and Wednesday, Dec. 11-12, 1906.

December 11, 1906, 9.30 A. M.

THE PRESIDENT: The meeting will please come to order. The first upon our program will be the address of welcome, by Hon. Henry Wallace, of Des Moines.

Mr. Wallace: Members of the State Farmers' Institute: It is certainly a great pleasure to me to have the opportunity of welcoming you to Des Moines. We are building a city here. They say we have 100,000 population now. I don't believe it. They say we will have 200,000. We may, and we may not. We have been taking stock of our resources. We have an abundance of coal all around us; but the unfortunate thing is, that for every ton of coal we take out, there is that much less; there is no more made. We have shale; but when we dig a ton of shale, there is that much less. We have stone, to enable us to manufacture cement out of the shale, which we hope to do by and by; but that is liable to the same objection. We have the capitol here, and that is something, a good thing to have the representatives of the State come around and watch the officers and see that they do right. We have schools and colleges; a good many elements of growth and greatness. But as we come to look into the matter closely, these, after all, are not much, except as backed up and sustained by the farmers of Iowa. We think we have in the farms of Iowa an asset of permanent value, provided they are properly handled. You know, I don't believe the Almighty has spent millions of ages, perhaps, in fitting Iowa as a home for man, and then expected it to be worn out in a generation or two generations. I believe he had an eye to the babies that are coming hundreds of years from now, to be fed and sustained by the soil of Iowa. Therefore, we look to the soil of Iowa for our great permanent asset. Des Moines without Iowa is nothing. Iowa could have another Des Moines, if it was out of existence. The difference between the soil and the mine is this: When you take something out of the mine, there is that much less. The farmer is the creator, a creator, not in making something out of nothing, but in making values out of preexisting material, the abundant, superabundant, moisture, sunshine and heat. Every blade of grass, every pig and calf, is a new creation, fresh from the hand of God.

It is our business and your business to create out of the sunshine and heat, and the electrical currents, food for the hungry nations. And how much food you will create, how well you will discharge that duty, how well the farmer shall prosper, depends altogether upon the education which this association furnishes, comprising, as it does, the professors of the Iowa colleges, the editors of agricultural papers, manufacturers, members of farmers' associations, and of the great breeding associations; upon these, I say, the future prosperity of this State depends for all time.

Therefore, friends, it is a great pleasure for me to welcome the representative men who stand for this future developmnt of the State. I do not know of any other men, or any other class of men, whether kings or potentates, or presidents, or members of congress, who are so worthy of a welcome to the city of Des Moines as the members of this association. Therefore we meet you with glad hands. We are glad to see you, as we are glad to see other representatives of the great business interests of the State of Iowa. We have had an astonishing period of prosperity. We know it is here, and we hope it is here to stay. I am sure that to a great extent depends upon the people you represent, who till the fair lands of the State of Iowa. Gentlemen, I give you a hearty and cordial welcome.

THE PRESIDENT: The response to the address of welcome will be made by Senator B. W. Newberry.

ADDRESS.

SENATOR B. W. NEWBERRY, STRAWBERRY POINT, IA.

Mr. President: On behalf of the members of this institute, representing the great agricultural interests of our State, I have the pleasure to voice their great appreciation for the generous welcome to this Capital City—the mecca for all great gatherings of Iowans, so fittingly and eloquently extended by one of Iowa's favorite speakers and leading agricultural journalist.

Agriculture has always been the greatest of our established industries, but agriculture is more than an industry; it is a progressive science. Our government is lending its powerful aid in promoting and extending all lines of this great industry, with the purpose "to make two blades of grass grow where one grew before" or where none grew at all.

The investigations in the laboratory and the experiment stations of the agricultural department have been of incalculable benefit to our country, and the good work has but commenced. The irrigations of the desert and waste places, the cultivation of many of the food products of other lands and adapting them to our own soils, the encouragement of tree planting and the preservation of our forests, the rescue and protection of animal and plant from scourges and diseases, the discovery and production of new food products, the prevention of the adulteration of foods and drugs and the precluding of the use of diseased unwholesome or uncleanly meats and other foods, and the ascertaining and imparting the best methods to be pursued in all branches of agriculture, are some of the efforts put forth by the agricultural department of our government.

Iowa is acknowledged to be the foremost agricultural State in the Union, and the agricultural interests should ever be given that just and full recognition that their magnitude and importance demand.

We do not have to remind the people of Iowa that they inhabit a goodly land and filled with milk and bread and butter. They have known that for a long time. And this year we have some corn. In fact, it is only occasionally that we have to go down into Egypt or Missouri for corn. Last year, according to the Year Book, we raised more than 346,000,000 bushels of corn, and this year the government and state experts agree that we will have at least 40,000,000 bushels more than last year. The efforts of Holden, Cownie, Wallace, Atkinson and other apostles of corn selection and corn cultivation have apparently been effective in the larger acreage and the larger yield. And if their instructions are followed by all our farmers Iowa's production of corn will soon be doubled.

But corn is not Iowa's only crop. We raise annually nearly 7,000,000 hogs, which aggregates more than Illinois and Missouri combined. We nave a million and a quarter of horses and nearly 5,000,000 of cattle. We raised last year 184,000,000 bushels of oats and a large amount of other cereals; 5,000,000 tons of timothy hay, besides a vast acreage of clover, wild hay, millet and other forage.

The hens of Iowa laid nearly 80,000,000 dozen of eggs, worth ten and three-fourths million dollars, besides the value of fowls was over eight millions.

We made over 82,000,000 pounds of butter. Figures where they reach the millions are bewildering. This is somewhat of the present measure of Iowa as an agricultural State. With all harvest productions Iowa is capable of greatly increasing them. The methods of farming are continually improving and land values are constantly increasing. With farm lands at $100 and upwards per acre the methods of the Iowa farmer must necessarily be more exact and his efforts more intense.

Seven years ago the Twenty-eighth General Assembly very wisely passed a law reorganizing the State Agricultural Society and establishing the State Agricultural Department for the specified object of "the promotion of agriculture, horticulture, forestry, animal industry, manufactures and the domestic arts," which department is placed under the management of a body known as the State Board of Agriculture. And it is made the duty of such board "to look after and promote the interests of agriculture, of agricultural education and animal and other industries throughout the State; to investigate all subjects relating to the improvements of methods, appliances and machinery and the diversification of crops and products; also to investigate reports of contagious diseases among domestic animals or destructive insects, or fungus diseases in grains, grasses and other plants; the adulteration of foods, seeds and other products, and to report the result of investigations together with recommendations of remedial measures for prevention of damages resulting therefrom. And it is made the duty of the Iowa Experiment Station to co-operate with the department of agriculture in carrying out these investigations."

So it is apparent that the State Board of Agriculture has a vastly wider field of operation than the holding of a State fair annually, even as great and successful as these fairs have been under the present management.

Since the establishment of a State Department of Agriculture, the State board has rendered commendable and efficient service. In the realm of legislation numerous remedial measures have been proposed and advocated by the board. Among those that have received legal enactment may be suggested the State Highway Commission, the property tax in lieu of the labor tax in the working of highways, the use of the King drag on public roads, the pure food law, measures beneficial to the dairy interests, laws pertaining to drainage, the encouragement of tree planting, inspection of registered cattle brought into the State, State registration of pure bred stallions, the protection of birds and their nests, the inspection of nurseries and nursery stocks, and others. The usefulness and importance of the State Department of Agriculture will become steadily more and more apparent in the passing years.

The law further provides that "in connection with the annual State agricultural convention the board may hold a State farmers' institute for the discussion of practical and scientific topics relating to the various branches of agriculture, the substance of which shall be pubished in the annual report of the board." And such institute is now in convocation.

These institutes are primarily educational. Great advancement has been made among farmers the past few years. Farming is no longer looked upon as a mere occupation. In no line of endeavor does education and skill count for more. In no vocation is there such a varied field of action and sure reward.

The rural population is a great safeguard in the maintenance of law and order and justice in a republic. Iowa is fortunate that she has no city exceeding 100,000 in population. Neither has she very many millionaires. With her population and wealth so evenly distributed, graft and vice, want and penury are reduced to the minimum. President Roosevelt in his recent message says: "It is a mere truism to say that no growth of wealth, no industrial development, can atone for any falling off in the character and standing of the farming population. During the past decade this fact has been recognized with ever increasing clearness."

The standing of the Iowa farmer in character, wealth and intelligence was never higher than the present. The Iowa farm and the occupant thereof must always be counted as the most potent factor in our commonwealth.

In closing, permit me to read a choice poem on Iowa written many years ago by Rev. H. M. Powers, then residing at Davenport, and which was recently rescued from oblivion by our worthy friend, Henry Wallace:

IOWA.

"Midst land where mighty torrents run,
With placid brow and modest mien,
With bosom glowing to the sun
Sits the majestic prairie queen.
Imperial rivers kiss her feet,
And free winds through her tresses blow,
Her breath with unsown flowers is sweet,
Her cheeks are flushed with morning's glow.

"Strong is her beauty, what cares she
For jeweled cliffs or rills of gold;
For seats along the sounding sea,
Or storied monuments of old.
Her bonds are strong, her frame secure,
Her praise on lips whose praise is dear.
Her hands, her heart, her purpose pure,
And God in all her landscape near.

"Ah, splendid in her ample lap
Are annual harvests heaped sublime,
Earth bears not on her proudest map
A fatter soil, a fairer clime.
How sing her billowy seas of grain,
How laughs her fruit on vine and tree,
How glad her homes in plenty's reign,
Where love is Lord and worship free.

"Land of the generous heart and brave,
Thy hosts leaped in the fiercest fray,
When bled our noblest sons to save
Our mighty realm to freedom's sway.
Thy children, known where honor lies,
The deeds that greatness consecrates,
And on their stalwart virtues rise
The pillars of a peerless state."

THE PRESIDENT: The next will be a paper by Mr. C. G. Meserole, secretary of the Iowa Farmers' Co-operative Association.

FARMERS' CO-OPERATIVE ASSOCIATIONS, WHY THEY ARE ORGANIZED AND WHAT THEY ACCOMPLISH.

C. G. MESEROLE, GOWRIE, IOWA.

In discussing co-operative practice on the part of farmers in handling grain, it at once becomes necessary to consider transportation and warehousing.

Between the producer and consumer there is, and always will be, the barriers of distance, and the facilities of warehousing and conditioning of grain; and we are ready to admit that these items of necessity have a legitimate place in the determination of values, and I shall leave it for my hearers to determine whether or not these items have been justly fixed or fairly maintained.

One instance of such justice will suffice to show the power and disposition of these masters of Iowa's agricultural destiny; twice within the past three years has the bulk of Iowa's crop paid a transportation tax on the basis of 12 cents per hundred pounds to the Mississippi river, while the grain of the Nebraska farmer was transported to the seaboard, a distance six times as great, on the basis of 11½ cents per hundred pounds, and yet the relations of the railroads and the elevator interests were such that only a fraction of the difference was given to the Nebraska farmer.

Some might ask, what has all this to do with farmers' co-operative associations? My answer is this: The line house elevator system, which absolutely controls the terminal elevators at the market centers, through their connection with the transportation companies, were able, and as a matter of fact did, for some time, dominate and control the local markets not only of Iowa but of all the grain belt states.

Toiling in the shadow of these great evils, the farmer has prospered in a measure; but this small measure of prosperity has been forced from the bosom of the soil by perseverence and self-denial; but the greater possibilities for profit to himself were often made apparent to him by the rapid and sure advance in prices after he had disposed of his holdings.

We must not suppose that the average farmer did not realize what the effect of these conditions were upon his chances for financial development, the problem with him then was a remedy, as an individual he could do nothing, railroads refused to furnish cars, commission men refused to sell his grain, he was told if he wanted to ship grain he must provide himself with an elevator.

What more natural result could be expected than the establishment of co-operative grain companies? But the farmers of Iowa, ever cautious, ever conservative, but ever practical as well, have not made as much haste in this work as the results of the earlier experiences would warrant.

For twenty years it was being demonstrated that such institutions could be made profitable, and the testimony of all farmers connected with the co-operative plan of handling grain is that it has been the means of increasing the price of grain to the producer from 2 to 5 cents per bushel and still allow a margin of profit sufficient to pay the running expenses of the business.

Let us be conservative and place the figure at the lowest estimate, and then see what the result will be. Place Iowa's corn crop at 350,000,000 for this year, allow one-half of this for feeding, place a farm value of 30 cents on this 175,000,000 of corn, and the elevator tax at the country end would reach the proportions of $3,500,000; add to this the tax on other grains of an equal amount, and you have the enormous sum of $7,000,000 which might be saved to develop Iowa's resources by co-operative handling.

And yet, with each succeeding year of co-operative practice, new and greater possibilities appear.

In order to call to your attention some oi the evils of the warehousing system, which comes as a result of the alliance between the railroads and the elevator interests, I shall trespass on your time long enough to read you some extracts from an address made by William T. Baker, who was president of the Chicago Board of Trade for five years, a man too honest to be useful to the elevator interests, and fearless in his denunciation of their methods:

EXTRACTS FROM PRESIDENT BAKER'S ADDRESS, JANUARY, 1895.

"Next to the incubus of the bucket shops is the tyranny of the elevator monopoly, which, from a fair and legitimate beginning, has grown to such proportions within your association as to threaten its very existence. And it is a broader question than the survival of the fittest among groups of business men and interests in this exchange. It concerns every merchant and every common carrier engaged in the great commerce of this city, and every farmer who contributes to make that commerce possible. The warehousing of grain is only an incident in its transit from producer to consumer. Its natural and healthy function is in accepting on storage the overflow of the season of freest movement that the channels of commerce may not be clogged or obstructed, and safely caring for the same while waiting a demand. But in Chicago the accumulation and storage of grain has come to be the chief end and aim of potential and dominating forces. The alliance between railroads and elevators has resulted in reaching out after millions of bushels not naturally tributary to us, and when gathered here preventing it by such tricks of trade as you are famliiar with from ever getting away again as long as storage can be collected on it. This policy has resulted in such congestion of grain here as to depress prices to the lowest point in history. For it is not the Chicago stock alone that this market has to carry. Its very volume invites dealers in every market in the world to make sales here against holdings elsewhere, which they would not dare to do but for abnormal accumulations brought and held here by unnatural means. Cargoes of wheat bought on European account in Australia, India, Russia and Argentina, as well as stocks at all other points of accumulation, are sold against here, so that our market feels the weight of the entire world's surplus. This condition is only made possible by the enormous and unnatural hoard brought and retained here to satisfy the avarice of half a dozen corporations, the largest of which is owned in London. A system that permits the proprietors of public elevators, directly or indirectly, to deal in the property of which they are custodians, is essentially immoral. The temptation to reserve for themselves the best of a grade is one to which the law never contemplated that they should be subjected. Indeed, the principal motive of the warehouse law was to prevent their ownership or control of grain in public warehouses. Yet it is notorious that during the past year the proprietors of elevators have had for sale and have sold millions of bushels of grain at a large premium, not one cent of which in equity belonged to them. The grain bought elsewhere by elevator proprietors is promptly sold here to you for some future delivery, so they become the custodians of your property, which, however, you can only get on payment of such premiums as the urgency of the demand may enable them to exact. It is an unwelcome task for me to criticise the methods of any class of our members, but this is an occasion for plain speech and honest, earnest effort to restore to this association its vanishing glory and traditions. The elevator monopoly is the same blight on legitimate business that anti-option legislation would have been if enacted. The old-time open competition of thousands has been superseded by new conditions under which each railroad terminating in Chicago is practically controlled by a single buyer. Special rates are made to favored individuals who have the further advantage of elevator control, so that rates charged to the public are rebated to themselves, thus enabling them to outbid or undersell all competitors. This charge of three-quarters of a cent per bushel for the first term of storage is retained only as a protection to elevator managers against the competition of legitimate dealers in grain. It is a charge that you cannot avoid, but which is ignored by them in their own transactions, thus forcing every one to sell or to buy of them. The fact that this charge is not bona fide, but only a foil to competition, proves that it is unjust and should be abolished. While elevator proprietors are willing to pay one cent per bushel more for grain "to go to store" in their own warehouses than the market price of the same grain in store (and subject to the charge of three-quarters of a cent per bushel), is conclusive that the first storage charge is not legitimate, and also that the subsequent terms of storage are unduly profitable. The charge for the transfer of grain from cars to vessels, a distance of perhaps 100 feet, is greater than the average rate of freight, during the past season, from Chicago to Buffalo. The same grain is transferred on track by the railroads themselves from western to eastern cars for nothing.

A proper solution of our difficulties must include facilities by railroads entering here for free warehousing of grain on arrival, and fair rates for storage on naturally acquired accumulations. The device of collecting storage in advance of delivery of grain has supplied largely increased capital to elevator proprietors to be used against you in the unequal competition for business. There is no legal or moral right in this practice, and it should be terminated altogether. Warehouse receipts for grain are made current by your rules. These rules are absolutely binding on every buyer in your market whether he is a member of your Board or not. It therefore behooves you to protect the innocent purchaser by every safeguard within your power. It is not only your right but your imperative duty to have such an oversight of elevator management as will assure to holders of warehouse receipts made regular by your rules that their receipts represent not only property, but uncontaminated grades and condition. In providing the requisites for regular receipts, it may be possible to correct some of the abuses complained of, as well as give adequate security to holders of warehouse receipts. But the legislature must be appealed to to so amend the warehouse law as to make it impossible for public warehousemen to be also dealers in grain; and railroad companies having terminals here should be required to warehouse their grain on arrival as they do every other species of merchandise. With this purpose in view, I recommend the appointment of a committee on legislation outside the Board of Directors, to promote the necessary legislation at Springfield."

Many members of that great exchange, honest in the conduct of their own business, yet lacking in moral courage, are just now coming to realize that the fight for a square deal should have been made long ago, and are now circulating among members of the exchange copies of this article which I quote from, in the hope that it may have its effect for good in the approaching election of officers of that exchange.

This spasm of righteousness, though long delayed, will be welcomed by all honest men interested in the growing and shipping of grain.

And co-operative companies claim the credit of bringing it about, for it comes as a direct result of the fight of the factions on the Chicago Board of Trade over the handling of co-operative business.

The purpose of farmers co-operative associations was therefore to secure to the individual, through organization, that which was impossible for them to obtain by individual effort.

The same intelligence that has placed Iowa's agriculture on so high a plane, has impelled the agriculturist to reach out for the just reward denied him under the commercial system which has been framed for the purpose of loot, without regard to the interests of the men who are the real captains of industry.

Couple this motive with the spirit of independence which has ever characterized our citizenship, and we have the reasons for the establishment of co-operative grain companies, which have not only proven profitable but give promise of being effective in the much needed cleansing of the streams of our commercial life.

Like the co-operative creamery, and all farmers organizations of the past, the co-operative elevator company has passed through the various stages of development, has met and overcome many of the difficulties which caused the failure of former efforts; notwithstanding the warfare that was waged and is still being waged.

The lessons learned by co-operatives during this struggle were varied and useful, and that we have profited by them is evidenced by the thrifty condition of 125 companies now doing business in Iowa, 100 of them having been organized within the past two years.

Among other things they learned that if they were to succeed they must be loyal to their organizations as individuals; that they must conduct their business on business principles, that in order to preserve their organization, and, the consequent benefits, there were certain measures they must adopt, such as limiting the number of shares held by one person, confining the ownership of stock as far as possible to practical farmers, voting as members and not as owners of stock, and the protection clause commonly called the penalty clause by the enemies of co-operation.

This clause provides that a member, in consideration of having an open market, unhampered by pools or price arrangements, where his grain may be handled at the minimum of cost, shall guarantee the maintenance of the institution by paying into its treasury a fraction of a cent for each bushel sold to a competitor.

In the organization of a co-operative company the probable amount of grain to be sold by the members is the first thing considered, and is the only basis on which they may figure for the maintenance of the elevator which is proposed to do the work and the inevitable expense connected with doing the proposed work; it would then appear that the members who took part in the organization should be held responsible for its success on the same basis that they are figured as members.

So far removed is this plan from being in restraint of trade, that it is exactly the opposite in effect, it guarantees to the member a free and open market where his grain shall be handled at the minimum of cost and performs the same service for the man, who like a sponge, is ready to soak up everything good, but who is always unwilling to become responsible.

It would seem, in the light of recent investigations, and knowledge gained from them, unnecessary to attempt to explain the necessity of this clause. It must be patent to all that there was railway discrimination, special privileges enjoyed by certain interests, calculated to drive all independent shippers out of business, or into the ranks of the combine.

In speaking of the independent shippers, I speak from actual experience. That I refused to surrender, or that I was driven out of business is of little consequence in dealing with the present as affecting the vast interests of Iowa agricultlre.

In taking up the fight that the few independent dealers had waged and lost in the interests of fair play to the producer, the co-operatives found that they were as greatly handicapped as the independent; that branch of the combine extending into the local markets, masquerading under the cloak of a trade organization, attempted a system of boycotting which at one time threatened the co-operative companies with destruction. Failing in this they did not hesitate to increase their margins at points where it was possible and use it to fight the co-operative companies.

To meet this kind of opposition the protection clause came into general use. That it has been effective need not be asserted by me; ask the representatives of the grain trust what its effect is.

That it has been effective in its general purport may be assumed, when taking into consideration the healthy condition of the 125 co-operative companies now doing business in Iowa, and that the percentage of failures of co-operative companies in Iowa for the past three years is less than that of any other occupation.

I do not pose as a reformer, nor am I one of those who advocate a great overgrown organization of farmers for the purpose of holding and hoarding wheat for a dollar a bushel, or corn for fifty cents, regardless of the laws of supply and demand; this is the middle ground on which the producer and the consumer should be able to meet and adjust prices unhampered by the power of monopolies.

I believe in co-operation because I believe it to be the most effective means of breaking down those barriers of trade which are always treading close to the line of criminal practice, under the law, but always able to escape the penalties of the law.

I believe the streams of our commercial life need cleansing, and the man who will deny the farmer his part in this work is an enemy to good government and a traitor to his country.

THE PRESIDENT: This paper is now open for discussion.

MR. HENRY WALLACE: I am very glad to hear this paper of Mr. Meserole. He has done good work in pushing forward this cause. It seems to me it is the duty of every man, whether he has grain to sell or not, to stand by this co-operative movement. It means a very great deal to the farmers of the State, even those who buy corn and grain, ought to stand by the purpose of this movement, for the purpose of cleansing the channels of trade. There is a great deal said against this penalty clause spoken of in the paper. I believe it is absolutely essential to the existence of co-operative elevators, absolutely essential to the farmers and elevators who make their living in this manner.

THE PRESIDENT: Next we will listen to an address by Mr. H. W. Collingwood, editor Rural New Yorker, New York.

DEVELOPMENT OF EASTERN AGRICULTURE.

H. W. COLLINGWOOD, NEW YORK, N. Y.

Members of the State Farmers' Institute, and Ladies and Gentlemen: Over twenty-five years ago I went through Iowa as an emigrant, going from New England to Colorado. I have not been here since and I am glad I had a chance to look around a little before I talked to you. I should feel more at home if I felt that there were those here that came from east of the Alleghenys, either as a pioneer or with their father. Let me see if there are any such here. (Several hands went up). In the East, at a meeting of this kind, when a man tells a story or makes a statement which is not believed or understood, he has to prove it. He must do one of two things, that is, take it back or prove it. (Laughter). I believe that is a good habit, and I hope you will come at me today with your broadaxes if I ever get off the track of your understanding or belief. One thing, however, must be understood, and that is, that I might not hear your questions, so I will ask you to write them out and give them to me. Perhaps your chairman here will consent to act as middleman between us.

My first idea of the middleman was obtained when I was a boy, living on a small Cape Cod farm. An old Yankee in our town ran a cider mill. He told three of us, all little boys, that if we would pick up two barrels of apples under the seedling trees along the road and put them into the hopper, he would give us all the cider we could suck through a straw. Now, I have had ambitions in my day and many of them are now dead; but looking back over a good many years, I don't think any of them quite equal to the hope of getting my mouth at one end of a rye straw with the other end dipping in a cider tank. So we worked like little slaves and picked up those apples and poured them into the hopper. Then came the owner with a regular Yankee trick. He told us we could have the cider, if we could get it, but we could not come inside of the mill. You might possibly scare off an Iowa boy by such a trick, but Cape Cod boys are not built that way. We went around the side of the mill and there we found a knot-hole close by the cider tank. We went to my uncle's rye field and picked up the longest straw we could find, and just as we were running it through the knot-hole, out came the Yankee and caught us at it. "I will fix you," he said, and he took two old rails and some boards and built a fence around the knot-hole. Then he went back satisfied that he had us going, but he didn't. We got the smallest boy to crawl, like a wood-chuck, down under that fence. He took two straws. One he ran through the knot-hole until it dipped into the cider, and he put that in one side of his mouth; then he put the other straw into the other side of his mouth and ran it out between a couple of boards in that fence, and it was pull the cider out of the tank on one side and push it out through the other straw, while we, on the outside, got a somewhat warm liquid, which once was cold cider. Now, that was my first experience with the middleman.

I have run up against a good many of them since, and I have learned that they are all the same. Their first ambition is to fill themselves up with cider, then they lose interest in the job and forget to pass it along. We had to take that little boy down to the spring and make him drink water until you could see it in his eyes before he would pass any of that cider on. Other forms of large middlemen that I have run up against swallow large quantities of so-called water, and then turn about and ask us to actually pay dividends on it, so that the middleman has come to be one of the important factors in the development of farming. We must, in part, at least, get away from him before we can hope to come to our own.

In Missouri, last week, a man came to me with the following proposition: "I get the idea, from what you say, that in the East the plan is to get must out of little, while in the West we are so strong and rich in crude material, that it is more like making little out of much." I don't know how true that is of you, but we, in the East, have certainly been forced to utilize waste and make as much as we can out of small resources. This man went on to say that a fool could make little out of much, but that it required hard brains and close planning to make much out of little, and I agree with him in both propositions. Standing at the stock yards in South Omaha last Saturday, a farmer from southewestern Iowa said, as one of those great steers rolled off into the cooling room, "that is the end of our farming." I was obliged to say to him, "it may end your farming, but it is the beginning of ours." We are willing to pay nearly $50 a ton for the dried blood which comes from that steer and we can pay $30 or $40 for the ground bone. We can add potash to these two and with this mixture raise more corn to feed to another animal at a profit; therefore, I was right in saying that where one system of farming ends, another begins, and the margin between the two is wide enough to afford the Eastern farmer a good living. It may seem strange to you that we can utilize the refuse from your animals or buy your grains at excrbitant prices, and yet we get our money back by doing so. You could hardly expect a Yankee to pay out a dollar unless he saw a chance of getting $1.10 back; so with these wide differences, it is impossible for a man to come here from the East and tell you how to conduct your farming. I can only tell you how our farms are developing and leave you to make the true application, for it is my conviction that sooner or later, you will be obliged to follow us in some directions, at least.

Let me give you, by way of illustration, two instances to show you how life in the East has changed. I talk in this off-hand way just as these things come into my head. Old men have told me how, on the old-fashioned Vermont farms, they used to bring the year's products to the Boston market. There were no railroads at that time and goods were hauled on wagons or sleds. They generally waited until January or February when the snow was deep and sleighing was good, then they hitched up their oxen. You men cannot conceive the idea of working a steer, because he does enough for you in the production of beef; yet, even now, in some parts of New England, the farm work is done by oxen, who work for several years at a profit and are then sold at a good price. But, when the load was ready, they hitched the oxen to the sled, several yoke at a time, and started off to Boston with their bee's-wax, honey, cheese, hides, or whatever they had to sell. It was a week's trip or more to get there and back. The day before they started the good wife would take a brass kettle and boil a thick bean soup in it. When it was fully boiled, she would put it outside and let it freeze over night into a hard mass. In the morning she turned the kettle over and poured hot water on the bottom, so that the cheese of bean soup dropped out. Then she would bore a hole through the middle and put a little chain through it, put a cloth over it and tie it behind the sled. When dinner time came, instead of going to the inn and paying a quarter for their dinner, they took a hatchet and chopped off a small chunk of this frozen bean soup. This they put in a little kettle over the fire and warmed it up, so that all the way to Boston they had bean porridge hot and bean porridge cold. You smile at these poor little economies, because you do not have to practice them, yet it was these little savings, the quarter, the dime or the penny, which helped develop this country. But what was done with the money thus saved? As many of your men know, it was sent out to your country, to the West, to be loaned to western farmers, on farm mortgages, and thus it helped develop your country. You paid the mortgages promptly and well, and now, I am told, your money, or at least part of it, is actually going back to help build the great sky scrapers in the Eastern cities and help provide spending money for the descendants of those old farmers. I say that you may smile, if you like, at the economy of the Yankee. You have a great country, you are rich beyond your own conception of it, and yet, if you will go back to the germ of it, back to the unit from which it started, you will find that you are quite likely to run up against the beans, the fish-balls, the doughnuts and the cheese that were eaten in the New England kitchen a century ago.

The development of eastern farming has been forced upon us by other industries. Your development has largely followed the development of the methods of handling the soil and growing stock. With us, however, farming has been changed by the growth of other industries. It has followed the developing of railroading, manufacturing and commerce. We have been obliged to change our methods of work with the change in our markets. Your towns and cities take a back seat and are dominated by the farms. With us it is just the reverse and we change our crop as the markets force us to change it. For example, I can tell you some surprising things about the development of markets in New York City. It may surprise you to know that tens of thousands of people in New York will not drink city water. The sanitary people have talked so much about the dangers of this water, that there has sprung up a demand for the natural spring water out of the brooks and springs of country hills in New England and New Jersey. This water is bottled at the spring and sent to the great cities, and it is an actual fact that in some cases the men who sell this water obtain more for it than their neighbors do for milk. It costs over $90 a year for the drinking water in our office. In the whole building where I work this cost is probably over $2,500 a year. In the city of Cortland, N. Y., a few years ago, there was a consumption per capita of three-eighths of a quart of milk. A doctor started to educate the people on the theory that milk is not a luxury, but a necessity, and that good milk is better than bad. As a result of that education, in one year, the consumption of milk was increased from three-eighths to five-eighths of a quart per capita. I speak of these things to show you how, as large cities develop and as men acquire large quantities of money, the tastes and demands for such goods will always increase, and naturally this changes the crops which a farmer will produce.

Then in some other cases, demands will come from the city, which probably you have never heard of. Where I live there is considerable more money made in boarding horses than in keeping cows and sheep. For example, there are in New York City thousands of truck horses kept at high expense. During the dull season the owners are glad to send the horses into the country, where farmers feed and care for them and charge $12 or more per month for doing it. The same is true of driving horses. When people go away from home, they like to have their animals go to the country for board. Yesterday I saw "Defender" the steer which won the prize at the International Stock Show. You think there is money to be made in feeding your hay and grain to such cattle, and yet I presume I will shock you when I say that some of our people in the East will make considerable more money in proportion to the capital invested, in boarding dogs and cats. There are women in New York City who think more of a cat than they do of a child. When these people go to Europe or away for the summer, they cannot carry these pets with them and do not care to leave them in their houses. They are willing and glad to pay such prices as $1.50 for a cat or $3.00 for a dog in payment for a week's board and care. There is a woman in Connecticut who, I am told, makes an excellent living by boarding cats. Left alone by her father with nothing but an old broken down farm, and without the health and strength needed to run it, she has gone into this business of taking care of these pet animals and receives a larger income than the majority of farmers in her town. I merely speak of these things and I might mention many others to show you how our markets have developed and how they have forced us into new lines of work. You will understand, of course, that I am not advising your young men to go East and board cats and dogs. I simply show you these things that you may think about them. In a similar way many of these things will develop in the West as your cities grow richer and larger and your people acquire these expensive tastes and desires.

I said not long ago that some of your money goes East. I shall show you, before I am done, that far more of it goes East than stays at home, and I have no doubt you will be interested to know how some of it, at least, is spent. Perhaps, I can give you an illustration which will point this out. An old man has told me, how seventy years ago the first railroad ran through the northern part of Vermont, and there were two small boys, who had never dreamed of seeing a railroad train. Mother told them that if they were good boys and performed their work, they could walk ten miles and stand on a certain hill and see the train go by. These two boys started out early in the morning, so excited that they forgot to eat their breakfast. Mother gave them two cents to spend on the way and told them they must be careful how they spent it. Oh! these thrifty Vermont mothers. You gentlemen, in your wealth and strength, smile at them today, and yet do you realize how much they did to develop your country? These boys, on their way, went by a store and invested one cent in two old fashioned crackers. Pretty soon they got hungry and they sat down and split one of the crackers and ate it up. After a mile or so more they were hungry again, and then they realized that one-half of their capital, one cent, had actually been spent. Still they were hungry and they split the other cracker, realizing what a dreadful thing it was, and just as they were to take a bite, one said to the other: "George, what in the world would mother say, if she knew how we were carrying on?" Now, I tell that story to show you how strangely things develop in this country. In Europe and in all old countries developments are slow, but things go at lightning speed on our side of the water. These boys were troubled because they had spent one cent. I am told that one of their grandsons, now a rich man in New York City, went with five others into a leading hotel and had an ordinary dinner. What do you think they paid for it? The bill amounted to over $65 for that one meal for six people. The old man on the Vermont hill was horrified to think of spending the one cent, and yet so quickly does society change in this country that in two generations paid over $10 apiece for a dinner and considered it an ordinary thing. That is the way, at least one way, in which your money and the interest on your money is being spent. Some day you will wake up to the fact that most of your money is going into the hands of middlemen and handlers and is being consumed, as a result, in this way, and then you will keep more of it at home. I can give you an idea of what you are doing by saying that your men out here on these rich prairies are helping to support three families besides your own. In this respect you are the most benevolent people I ever heard of. I can demonstrate that in part by a bit of my own experience. Last year I needed one ton of baled hay to finish out my stock last spring. I bought the hay in New York and by the time I got it into my barn, twenty-five miles away from New York, it cost me just $19.75. Curious to find out what the hay cost on the farm, I traced it back as well as I could and the best price that I could get was $5.80 to the western farmers for a ton of mixed clover and timothy. Since coming here and talking with your farmers I have been told that probably that man received 80 cents more than any of his neighbors could. Just realize what that means. There was $13.95 of the price which I paid for the hay, which was handed out to the railroads, the truck men and the commission men and all the other fellows who stood in a long string between your farm and mine. You talk about my little middleman behind the fence sucking that cider through a straw; he was not a circumstance to the way these gentlemen were sucking the dollars out of your pockets.

I have told you how our markets have changed. Of course these special things which I speak of are not common with all sections. They are generally confined to the farms close by the large cities. As a rule the soils near the towns are poor, but by taking advantage of these remarkable opportunities farmers are able to obtain fair returns from small pieces of ground. To take up a kind of farming which is in your line I can give you two illustrations of what is done on soils further away from the towns. First, I speak of a farm in Middlesex county, New Jersey, some fifty miles south of New York. This farm is naturally good soil, well located and contains about ninety acres. When Washington made his campaign up and down through New Jersey his soldiers frequently passed through this section and it was from this farm and others near by like it that his soldiers were fed; so that you will see this farm was producing grain and wheat at a time when all you had here were large herds of buffalo, with nothing but Indians for proprietors and hired men, and yet with nearly two centuries of crop production, I may say that this farm today is producing more than it ever did before—more in potatoes, wheat, corn and grass. It will grow 300 bushels of potatoes to the acre, over thirty bushels of wheat, and from two and a half to three tons of hay. One year with another these fields will produce nearly as large a yield in corn as you do here in Iowa, while, of course, the stalks are worth much more than they would be with you. You naturally ask, how has this been done? How can this be done after 200 years of production? The use of chemical fertilizers in connection with clover sod and such manure as the farm produces, is responsible for this condition. Every year there will be produced $500 worth or more of chemical fertilizers, particularly upon the potatoes, and one year with another this ninety-acre farm will yield over $3.500 worth or more of farm products. I don't believe there is an average farm in Iowa within reasonable distance of a market that can beat or even touch it; yet this is only a fair sample of what we, in the East, can do with commercial fertilizers. You will understand that I don t give this as an argument that your men should begin to use fertilizers, for it seems evident from your crops and the appearance of your soil that you do not yet need them. I merely show you how, after two centuries of hard cropping, these fertilizers enable us to keep up our farm crops. Another illustration is that taken from Maryland. On the peninsula between the Atlantic and the Chesapeake Bay there is a stretch of dry, sandy land. To your eyes it would be worth little, except as material for making concrete; and yet, before the Revolution, that land and others like it produced vast crops of wheat, which were sent to Europe to help feed the people. During the French Revolution we sent ship load after ship load to people in France and probably saved the French republic. This kind of farming in Maryland developed a class of gentlemen farmers. They had their 500 acres or more of land and slaves did the work. Go through that country today and you will find the ruins of a lot of old-time mansions, scattered up and down through the State, which were built on the proceeds of this wheat growing. Your country ruined this business. The cheaper grain and the wheat from the West came into the East at such prices that these gentlemen farmers could not compete, with their use of fertilizers and expensive methods of labor. They abandoned the business and in many cases the land started back to the wilderness. Now, strange to say, wheat growing is again coming up as a profitable enterprise in this section. The western land is largely used up, since the population has grown and the price of wheat has risen, and many of the modern methods enable the Maryland farmer to produce a bushel of wheat cheaper than he ever did before. So strange is the development of society in this country that I may say only the other day a great Maryland farm that has gone down through generation after generation of Americans was sold into the hands of a band of Russian Christians, who came to this country seeking freedom and opportunity. You will ask me how this thin and barren land can compete with the West in growing wheat. It is simply because these farmers have learned how to economize on the price of their plant food. Wheat is usually sown in that country in October and cut in the middle of June. As soon as the wheat is off they go in with their disc harrows and tear up the stubble thoroughly, then they sow a bushel or five pecks of southern cowpeas to the acre, cover them thoroughly and add for each acre about 100 pounds of muriate of potash and 300 pounds of acid phosphate. In a favorable season the cowpeas make a heavy growth and early in September they are plowed under or else hogs are turned in to eat them down. As soon as they are plowed the wheat is again seeded and so on, year after year, with one crop of cow peas growing between each two crops of wheat, and it is a fact that with this treatment the yields of wheat keep on increasing, while the soil seems to become even more productive with each year. The cowpeas furnish the nitrogen and the chemicals provide the potash and the phosphoric acid. This is the way in which the eastern people are studying out new methods of farming, and it may be said that they are succeeding well in doing so.

From this follow other questions. I speak of what these men are doing on that cheap, abandoned land. They are not truck growers, but raising much the same crops that western farmers do. They are succeeding and doing well, on land which costs them only $30 or so, in competition with your $100 land. How then could I go to a young man in the East and tell him to go to Iowa and raise corn and fatten stock, a way off at arm's length from the market. His first question would be, what must I pay for the land? I imagine if you go out into this State and find land well located you will probably have to pay $100 per acre, while this man could go to some of the waste land in the East and buy it for $30 or a little more. He will also ask what will the outfit cost. On your black, heavy soil you must have big horses and strong tools, and you cannot work the land all through the year, whereas, on the lighter land of the East, my man can do the greater part of his work with a disc harrow and a light team of horses or mules; not only so, but he can work through a large part of the winter, preparing the soil. As a matter of fact, you men will realize the fact that in one respect you are too rich and that your land is too strong. If you only had a streak of our dry sand and gravel running through your country once in every twenty miles or so you would be better off, for that would give you good road material. I would hardly be justified in telling a man with limited capital to come to Iowa and buy the expensive land and the outfit which would be necessary, when he would go to the Delaware peninsula, for example, buy land at one-third the cost of yours, have more working days through the year and produce practically as large a yield of grain as you can. Not only so, but you will raise 100 bushels of corn and sell them at 30 cents, while he can at least raise eighty bushels and sell for 65 cents or more. You will see from this that the time has come when by reason of the cheap lands and high prices the East has really become a competitor with the West in attracting emigrants. The average man who goes to a farm in the East comes from towns and cities. He has worked at a desk probably for a number of years and sees that he cannot hope for advancement there. With a capital, usually not more than $2,500, he will go into a strange business and attempt to provide a home for his family. You will probably agree with me, from what I have said, that such a man has really a better chance to take up one of the neglected eastern farms than he would have to come here and attempt your larger farming; and here is another thing that will seem strange to you: In the town of Willington, Connecticut, there are a little over 200 voters, which will give you an idea of the population. Yet at the railroad station alone there was sold from the feed store last year over $30,000 worth of western grain. In the town of Rockville, a larger town, these sales amounted to $125,000, and in Putnam, still larger, $200,000 worth of your grain was handled. The very life-blood of your soil is thus going to the East, and what I want you to remember is that many of our eastern farmers can actually pay these enormous prices for your grain and make more out of the feeding of it than you do. I doubt if you ever saw a Yankee pay out a dollar for grain unless he was pretty sure of getting more than that out of it. For instance, take a section that I know in Connecticut. They will take a dollar's worth of your grain and feed it largely to poultry. The proceeds from the poultry will amount to at least $10, and the manure from the hens mixed with murite of potash and acid phosphate will help produce another crop of peaches, which will bring nearly a dollar more. Perhaps these things are new to you, but I state them as facts to show you how in the East we are forced to take advantage of opportunities, and it has been said that if you corner a Yankee he will proceed to corner the corner and make it available for sale with those who formerly thought it had no value. You will see things which elderly men in the East have done when deprived of their places in the city which would astonish you were I to tell you. I know a man now close on to 70 who, in the panic thirteen years ago, was thrown out of his position with a mere handful of money, which he had saved. He went to one of the hill towns in New England and bought a neglected farm. He has improved the place so that it could be sold for twice what he paid for it. He has a flock of Wyandotte hens, which yielded him a steady income of over $700 a year. He has a peach orchard in addition. The New England farmers have studied out one great truth and that is that a man never does his best until he is up against hard and fierce opposition. That is one of the troubles with your people; you have never been really "up against it" in your business as farmers. When you do really come face to face with hard opposition my judgment is that you will solve many of the troublesome problems which are now facing us in this country. I had this idea of burden bearing forced upon me when I was a boy. One day the old gentleman took me out to the woods to haul home a log. He had an old horse, spavined, wind-broken and thin as a rail and otherwise out of shape. He hitched this horse to the log, but the poor old fellow could not pull it. The old man sat down on a stump, took out his handkerchief and rubbed his head. If you gentlemen ever see a bald-headed Yankee rubbing his head with a red bandana you can make up your minds that great things are to happen. He finally got up and said he had figured it out right. As he put it, the horse did not have weight according to his strength, so he put me on the horse's back and he said this extra weight would hold the horse's feet on the ground for a better purchase. I give you my word that it acted just as he said it would, for when I got on old Hero's back he pulled the log. I have found since then that men are at their best when at some time in their life they run up against hard propositions and poverty. You show me the young man, brougnt up under hard conditions, to realize the necessity of toil and the glory of labor and the power to overcome natural forces, and I will show you the making of a man. Show me, on the other hand, the boy brought up as though comfort and luxury were his natural heritage; the parents sending him to college, just simply because it is a part of a gentleman's training, gratify his every wish and will not make him work, and as a rule I will show you a weak, nervous, good for nothing creature, who is more likely to be a disgrace to his country. Under the shadow of these great cities in the East there are boys and girls who are ashamed of honest poverty. We have some of them near where I live. When they get to be 19 or 20 years old they leave the farm, boarding at home with mother, but going to and from the city every day. They obtain a job at small pay; they dress as well as they can and are ashamed of the evidences of honest economy. Sometimes you will see the boy coming and going, carrying a dress suit case on which you will see labels of Rome, Naples and other European cities. Some friend brought these across to him and he has pasted them on his case. What do you suppose we would find in that case if we opened it? Very likely two sandwiches, a boiled egg and a piece of pie. These people are ashamed to be seen carrying their lunch in their hands, ashamed of the lunch mother gave them and which father provided. Poor, foolish, ignorant fellows they think they can carry their dress suit case in their hand so that people will really think they are wealthy young men going out for an evening party. I regret to say that some of this also applies to the girls. You will see some of them coming and going with a music roll. As a matter of fact they couldn't play the tune that the old cow died of, and yet they would like to have people think that they are great musicians or that they are going to take a music lesson, when all they have in the roll is their lunch. You will see young men in New York who will eat 10 cents worth of pork and beans for their lunch and go and stand on the steps in front of the Astor house and pick their teeth. I sincerely hope that these false ideas of a man's real condition have not yet come to life seriously out here. Some of these people outgrow this foolishness. It is kicked out of some by the hard boot of adversity, or lashed out by the sting of poverty or self-respect. With others it remains and ruins the man or woman who starts that way.

I have spoken of the results which come to us through our highly developed markets. I fear that some of you men in the West have really made up your minds that the eastern farmers are on the verge of ruin;

that they are starving to death, and that the only relief for them is to go West. Men are not on the verge of ruin when they have the opportunity to sell spring water at 2 cents a quart, or when the opportunity is offered them to sell certified milk at all the way from 8 to 15 'cents, or where fruit, eggs, meat and vegetables of a special character can be handled at enormous prices. Not all have these opportunities, and yet the skillful and the strong go after them. I do not know whether certified milk is a product of your country yet or not. In the East it is a business. A dairyman fits up his stable, cares for his cows under the supervision of a local board of health. The doctor comes and looks around to see that he lives up to his contract. The milk is tested from time to time and when assured that it is perfect the doctor and others recommend it to their patients and their customers and immense quantities of it are sold in that way. there are many of us who are able to sell every apple that is fit at $2.00 or more per bushel box. You can imagine what this means per barrel. In my own case I have found road advertising most effective and we have a blackboard nailed to the fence and whenever we have anything to sell the name is chalked on this board and you would be astonished to see how much is sold in this way, for one traveler, if he does not want what is offered, will carry the news of it on his way. It often passes from man to man until a customer is reached. There was one case in New England where a man was asked to try this plan. He said he had nothing to sell but a dog and no one wanted such a thing as that. Still he tried it and put up a sign. People who went by all laughed at him, calling it a ridiculous thing to offer a dog for sale. Finally one man went by, laughed with the rest, and told his brother-in-law about it. This man thought it was a bigger joke than the other and he went about telling what a fool a man was to offer such a thing for sale. In this way the news was spread until it actually reached a woman in a town some miles away who wanted just such a dog for her children, and she came and bought it. I bought a road cart in just that way. A man miles away put up a sign that he had a road cart for sale and the news came to me through a dozen different people. I should not have known anything about it had he not put up that sign. We have learned in the East that it is a necessary part of our business to toot the horn or blow the bugle whenever we have anything to sell, for I am safe in saying that if it were not for our high prices our local markets and opportunities to get lots in our country you would drive us out of business, even at a long range. It is our salvation, this local market, and if you develop local markets in your own State, as they might be developed, you will help both yourselves and us. And yet, speaking as I have about the material prosperity and possibilities of the eastern farmers, I must say that there is a shadow—and a black one—behind the picture. If you were to have located in your State a city like New York or Philadelphia, with their millions of people, with all the sins and crimes of a great city, and all the depressing influences which they send out, it would be one of the greatest calamities that could fall upon your State. Many would say, "We would welcome such a city, for it would give us a great local market where we could sell our corn and our cattle." It would increase prices for many of our products by 50 per cent. I grant that, yet I repeat that it would be a great calamity. The depressing effect of city life upon the farm boys and girls is something which must be seen to be realized. The worst thing we have among our country homes is the shoddy millionaire, who goes to the country and builds a house upon a farm. It is not home for him, but simply a place for advertising his wealth. He places a palace among our farm homes. We sell him our products and get our money for them. Pretty soon we will find our boys and girls trying to imitate the rich. They are beginning to despise the simple, plain, humble life of their father and mother, anxious to get away and carry on the little deceptions of the dress suit case and the music roll. That is often the beginning of a most unfortunate end. As for me, I would rather live on cowpeas and bread and cheese all my life and bring up my children in the fear of God and in the belief of a country home than to take Rockefeller's money and be responsible for what it stands for. You men out here do not yet understand the awful blights with which the eastern farmer comes in contact. There are ten million of people in this country in poverty, that is, they are obliged to depend upon some kind of charity, and seven million of them are children. Do you ever stop to think what that means and what it will mean to your children and their children who follow them? The State of Massachusetts is doing one noble thing. They found that by crowding these poverty-stricken children into reform schools that they were making criminals faster than in any other way, so they offered a small price, say $2.50 a week to farm families who would take these little ones and bring them up. Many a farmer's wife was starving for the love of a little child and they took two or more of these little ones into their homes and saved them for society and helped themselves. I know of a man in West Virginia who during his life has taken thirty-seven of these little homeless orphans into his home and made men and women out of every one of them. I know of a màn in Indiana who at one time had in his home nine of these little things. You don't feel the necessity for doing these things yet, but the time will surely come with the development of your towns and cities when the overflow of the misfortunes and sins of humanity will roll out upon your farms. If a blight should fall upon the Iowa corn crop and wipe it out from one corner of the State to the other, or upon your tree crop, so that it might stand blackened as with fire, or if a disease should strike your cattle, so that I might travel from one end of the State to the other without the sight of a steer or a cow, it would be a calamity, but it would not ruin Iowa. In ten years, profiting by the mistakes of the past and by the hope for the future, you would regain what you have lost. But let a blight fall upon your child crop, a moral blight, or the blighting of false ideas, and God help the nation or the state which must pay the penalty for it. So I say, do not be in too much of a hurry to develop these great cities in your State. Keep your prairies free, if you can, and hold your farm homes together as long as possible. Learn your lesson from the East, that while the great cities and towns will help your market, yet they send also a blight, which is creeping out to our farms and homes and getting into the best crop that we can raise. I thank you.

THE PRESIDENT: We will now listen to a paper by Mr. Don L. Berry of Warren county.

WHAT THE FARMERS' INSTITUTE IS DOING FOR THE FARMER.

DON L. BERRY, INDIANOLA, IA.

While it would be impossible to get information that could be set down in figures as to what the institutes are doing for the farmer, we can at least say of them, as Mr. Wallace says of feeding soft coal to hogs: "They seem to want it, therefore they must need it and it must do them some good."

If the farmers' institutes are of no advantage it is difficult to explain their rapid growth within the last few years. Today no less than eighty-four county institutes out of the ninety-nine counties in the State are reporting to this board of agriculture. The organization of farmers' institutes has become so widespread that the national department of agriculture has established a division for the special purpose of overseeing them. It is, therefore, plain that the spread of institute work is not confined to Iowa. In fact, it is a question as to whether Iowa is not a little behind, at least in the management of her institutes.

As I said in the beginning, it is almost impossible to get tabulated or collected information on what the institutes are doing in this State, while many of the other States require quite full reports to be submitted to the State board. For information as to the work done in their sections of the State and for suggestions in the preparation of this paper I must acknowledge my indebtedness to Secretary Oberdorf of the Bremer County Institute, and to Secretary Miller of Washington county.

A very fine line shows where the work of the State experiment station leaves off and that of the institute begins. The agricultural press also comes in for a share of the credit for the advancement in agriculture, which is self-evident on every hand. Many of our best publishers have farms, which are nothing less than private experiment stations.

We might sum up all these influences and their results under the head of the spirit of agricultural education. The results of this need not be set forth in detail. Scarcely a farmer in the State has failed to come under the influence, at least to some extent, of this spirit of scientific or more intelligent farming. The seed corn trains and the wide dissemination of literature by the periodical press and the State and national bulletins are credited with adding several millions of bushels to the Iowa corn crop of this year.

This campaign for better farming has put a check on the wasteful methods which formerly prevailed on too many of our farms. The demonstration of the need of conserving the powers of our soil has led to a more general and systematic rotation of crops, to the careful saving and hauling of manure and to the feeding of the crop on the farm. The well-prepared tables of the cost of producing crops and live stock, put out by the experiment station, have led many farmers to see the wisdom of keeping books with fields and herds; that is, to a better business management. This campaign has tended to improve our live stock and to cause men to demand that class of animals which will produce the maximum of beef, pork or butter fat from a bushel of corn and a ton of hay.

In view of the fact that information is so widely and cheaply disseminated through the press and by the railroads with such good results, the question naturally arises: What is the use of the State appropriating over $12,000 annually to promote institute work?

If I understand the purpose of the institute it is, briefly, this: To make the principles established by the State and national experiment stations and other agencies applicable to the conditions of the county in which the institute is held.

The principles established by the experiment station in Story county will hold good in Lyon and Lee counties, but there is more than likely to be need of some change in the application. Practices, the usefulness of which are well established in Lincoln, Urbana or Madison, may be only partially practical or absolutely worthless in central Iowa.

So, I say, if I understand the place of the institute, it is primarily, to bring to us in the counties the men familiar with the work of the experiment stations and with the practices of the most successful farmers, and familiar with the conditions on these farms, and to give us the opportunity to discuss with them the application of their knowledge to our own neighborhoods and counties.

One of the strongest features of the institute is that it is, or should be, an absolutely non-partisan organization for mutual self-help. In the institutes farmers come together each year for the consideration of matters of general interest, free from the restraints of partisan prejudice. An organization of this kind, acting within the field which it would naturally cover, may forward many public movements or stop abuses, which if taken up first by some party or faction would be ineffectual. I am told that the rural delivery system was first agitated by the farmers' national congress. It was put into operation quietly and without any fuss or feathers and now reaches almost every community in the Nation. Had this matter been first brought forth and pushed by some party or demagogue it is scarcely possible that it could have been so quickly brought to its present high state of efficiency.

In many counties the success of local public enterprises is due primarily to the institutes. They have an influence entirely out of proportion to the numerical strength of their members. Being non-partisan in their makeup, comprised as they are of those men of the community who are abreast of the times, those who are in the collar and not in the breeching, of the men who do things, they are in a position to influence county legislation.

In nothing is the influence of the institute felt more than in the good roads movement. By general agitation among members, by employing experts for instruction in the use of road tools, by offering liberal prizes and obtaining help from boards of supervisors, the institute has given improved roads to more than one community in Iowa. Not alone in the use of the road drag have the institutes been effectual. Substantial improvements in the way of concrete and steel bridges and culverts and the cutting down of hills and filling of hollows will be done when the institutes convince the supervisors that the hustling element of the county wants money expended that way. It takes a public sentiment such as can be best expressed through the institute to get appropriations for improvements of this kind.

In nothing is there greater hope of keeping the boys of today on the farms of tomorrow than in the movement for the study of agriculture in the public schools. In this enterprise the institutes are in the lead, as they should be. Such a department of study is advantageous to the scholar in school and after he leaves. The school hours are irksome to many boys. They do not see how school is going to do them any good. They want to do what men do. Men don't have to spell and study grammar. The boy thinks grammar won't help a fellow to break a colt. Give the boy something in school that he can see is going to help him to do what his father does, and to do it better than his father has done it, and the school takes on a new attractiveness.

On the other hand, there is the boy who delights to go to school and would like to do nothing else. To him study, the learning of things outside the life he has always known, is an end in itself. To him the drudgery of farm life is a sad outlook for a life work. Perhaps he prefers science. Teach him that in farming he is every day dealing with the very fundamentals of science. He may have a taste for business. Teach him that the farmer's success is dependent on good business management as much as any other. Perhaps he wants to be a manufacturer. Show him that the farmer is, of all men, a producer. Then, when he is sent to haul the litter from the barn, he ceases to look on himself as a scavenger, but as a producer of fertility, in turn to be manufactured into corn and hay and beef and pork. Has he a taste for art? On the farm his daily rounds bring him at almost every turn upon such pictures as no painter can trace, if he will only look around and see them. Does he love literature? When is a better time and where a better place than the winter evenings on the farm, away from the rushing diversions of the city, to really make the acquaintance of the masters of writing? All the life of the farm, the harvest, the threshing time, teem with characters, which, if he could depict them, would make a classic literature.

The teaching of agriculture in the public schools is making the boys and girls the masters and mistresses of the farm and not its slaves. No agency is doing more to promote this branch of education than the farmers' institutes. They are securing the tidying up of the schoohouses and yards, inculcating in the youngsters that little something known as taste, which costs little, yet makes life a thousand times more worth the living.

I am informed that a farmers' institute in this State inaugurated the custom of having butter contests, now so common, and which has resulted in improving the quality of butter produced by our Iowa creameries. This same institute has built up the creameries in its county and introduced improved methods of handling milk and cream, so that the cream is delivered in better condition than formerly.

In the conduct of the county experiment station the institute is reaching its highest state of perfection as an organization. Iowa is now dotted with these county stations under the general supervision of the State station at Ames. May the day soon come when every county will have one, where the results from different varieties of grains and grasses and from different methods of cultivation may be seen. In no other way can the benefits of agricultural experiments be brought so close to the business of the average farmer as through the county station. The results achieved by the stations now in operation have been eye openers to many people. Tom Jones has been brought face to face with the fact that what he considered the best corn on earth, the kind he has been raising all his life, and his father before him, stands a poor show for a crop when planted alongside Dick Smith's corn. And maybe Dick Smith has found that an acre of his hundred bushel corn will not make as much fat as an acre of Sam Brown's eighty-bushel corn.

The institute session, with its many lessons and measures, tends to keep up a year long agitation of agricultural problems among its members. Show me a man who is full of small gossip and I will show you a man who is not in the institute. If he were he would have something better to talk about. The benefits of the institute session are being felt throughout the county every day. Experiments are being tried, new practices adopted and the results compared daily.

The increased interest in really good farming is cleaning up our county fairs. The fake show is not needed to draw a crowd. The crowds gravitate to the stock barns and agricultural halls. This educational spirit is relieving us of the two-headed pig, the three-legged rooster and the man-headed bull, and by removing old prejudices and riding down cranky notions is assisting materially in relieving us of the bull-headed man.

The institutes are not idle in the matter of home surroundings. There are none of us who cannot think of men working apparently with the notion that the house is only a sleeping place, a coaling station, if you please, where they get supplies to run them from one meal to the next, and may "lay to" for repairs at night. The institutes, through the women's sections, and through the influence of the men who are addressing them, are calling attention to the fact that the whole business of the farm is subsidiary to that little enclosure inside the yard fence, where home is. They are teaching that the keynote of the home is companionship, and that no woman, however gifted by nature, can be a cheerful companion if her outlook is over a yard shorn of its verdure by the poultry, and her horizon a brush patch; nor can her company be uplifting to its fullest capacity if, after running chickens and carrying wood and water all day she has to work butter till 11 o'clock at night.

The corn shows and other exhibitions held in connection with most institutes are of an educational value not to be overlooked. I have not time to touch on this matter farther than to say that the corn show puts men in touch with good seed corn in their own county, which is thoroughly acclimated. They buy that instead of sending to a seed house for corn from no-one-knows-where.

The institute is bringing the farmer and the business man into closer touch. It makes "something doing" in a town. It increases production, therefore business.

The institutes are helping markets, although slowly. A high grade of corn in any locality will draw buyers there to get that corn. A general high grade of horses in a county draws more buyers, makes keener competition and higher prices.

This brings to me that which is last but not least, the community of interest encouraged by the institute among its members. Each helps the other in helping himself. The spirit is unselfish. Men are made better friends, better neighbors and better citizens by connecting themselves with a public-spirited movement of the nature of a farmer's institute.

THE PRESIDENT: We will now stand adjourned until two o'clock this afternoon, at which time the program will be resumed.

AFTERNOON SESSION.

2 o'clock P. M.

THE PRESIDENT: The first on the program this afternoon is an address by Professor W. J. Kennedy, of the State College at Ames.

THE DRAFT HORSE—WILL IT PAY THE AVERAGE FARMER TO KEEP PURE BRED DRAFT MARES.

PROF. W. J. KENNEDY, AGRICULTURAL COLLEGE, AMES, IA.

It affords me much pleasure to have the opportunity of presenting the topic of the draft horse to you. There is a peculiar pleasure always in helping some industry at a time when you feel sure that there is a bright future before the same. Some of you may be thinking that the business of producing draft horses has seen its best days and that a reaction is close at hand. You may be right in your convictions. Time alone will tell the tale. There does not appear to be any sane reason for believing that the horse industry has not a bright future. To all appearances about the only thing that can injure the demand for good horses in the near future would be a depression in all lines of business.

For several years the demand for good draft horses has been unusually good. Each succeeding year has been a trifle better than its predecessor, until at the present time high class draft horses are selling for higher prices than ever before realized for this class of animals. Are these high prices to continue? Someone will say that such a thing would be impossible because of the large number of horses now being produced each year. To all appearances our farmers are heavily engaged in the production of horses. What are the real facts concerning the number of horses in Iowa today compared with that of six years ago. According to the most recent statistics published by our Department of Agriculture we had in the State of Iowa in the year 1905 horses of all ages to the number of 1,238,159, while on June 1, 1900, we had 1,392,573, or 154,414 more horses than in 1905. If these figures mean anything it will be some time yet before there will be an over-supply of good horses in this State. It is doubtful if there was ever a time in the last decade when good, high class draft horses were as scarce in this State as they are at the present time. Horse buyers will tell you that it is next to impossible to find a carload of good draft horses of a salable age in any one locality in Iowa. Even the men who make it a business to feed out young horses are experiencing no end of difficulty in finding suitable animals for their feed lots. Good people, the time is not near at hand when good draft horses will have to go begging on the market.

In the production of draft horses, like all other classes of live stock, the man who first makes a study of the market demands and then sets out to produce exactly what the market wants will reap the greatest degree of success. There are many things in this world which are difficult to fathom. If a man has decided to go to Chicago, New York or some other point, about the first thing he does is to consult the local ticket agent or use a railroad guide so that he may ascertain the cheapest and shortest way of reaching his destination. If he did not do so you would not deem him a good business man. Why, then, are not the same tactics worthy of consideration in the production of good draft horses. In the breeding of draft horses the line of breeding that will produce the desired result in the cheapest and quickest way is the one which should commend itself to any man interested in the business.

A study of the market demands as they pertain to the draft horse reveals the fact that weight is still as desirable as in past years, so that a draft horse, to sell well, must weigh from 1,600 pounds upwards and be of the desired draft type. That is, he should be massively built, deep-bodied, short-coupled, heavily muscled, short-legged, a good actor, and possess feet which are properly constructed and out of durable material. Such a horse can be economically raised on any Iowa farm, and owing to the strong demand for him, he finds a ready sale at a price much nearer his real market value than any other class of horse that can be produced.

Time will not permit of a detailed description of a typical present day draft horse. There are some points which are very essential, and these will be treated in detail.

The conformation of the fore and hind limbs of a horse have a very marked influence on his value in the market because his utility is very largely determined by the construction of these. The first point to which I wish to draw your attention is the differences that exist in the nature of the material that enters into the structure of these parts. We are accustomed to the use of the terms flat bone and clean limbed, and these are quite expressive in themselves if we understand what they mean. A horse that is flat limbed and also clean in limb is much more durable in those parts than one that is round, coarse and "gummy." When we refer to a horse being flat-limbed or flat-boned we do not mean that the bone is flat from a side view, but we do mean that the tendon stands back so far from the bone as to make it in the region of the cannon appear flat. The chief advantage of having this conformation is due to the better attachment it gives to the tendons and also to the freer play which they have as a result of this conformation.

Cleanness of bone is desirable largley because it indicates a dense, strong texture of bone, with joints that are free from puffiness and not subject to coarseness.

The slope of the different parts is another important point to be observed. For instance, in the case of the fore limb, the shoulders should have a strong slope and the slope of the pastern should be correspondingly as great. Some good authorities claim that the slope of the pastern should be at least 45 degrees. A proper slope of shoulder gives a horse freer limb movement. It also shortens his back above, giving him greater strength in that part, and also increases the length of the underline, thus giving him more room for action. Slope of shoulder, when associated with slope of pastern, and the two always go hand in hand, does away with severe concussion, a most vital point. An examination of the skeleton of a horse reveals the fact that in the construction of the fore limb there are a series of bones which act more or less directly upon each other. The presence of the great number of small bones below the pastern and their relation to each other in slope would indicate that this part below the pastern would be subject to considerable concussion, and on that account it would be necessary to arrange the slopes and the position of the bones so as to eliminate or distribute this concussion so far as possible. It is not difficult to understand that if the shoulder blade is straight and the pastern straight this series of bones comprising the fore limb will hit each other in a very severe manner and will eventually produce a great number of bone diseases which these parts are subject to, such as side bones, ring bones, and other troubles.

The set of the limbs is another very important point. Viewed from in front the legs should be well placed under the quarters. If they are set too far apart the horse will have a rolling motion when in action. The feet should be in a straight line, neither turned in nor out, as both conformations interfere with the action. Viewed from the side the legs should be straight, neither bulging forward, called knee sprung, nor backward, called calf-kneed. The proportion of the bones to one another in this region is in a large measure responsible for these defects. When the leg formation is exceptionally long from where it joins the body to the knee it is likely to throw too much weight on the knee and produce what we call calf-knees. If, on the other hand, the length of the cannon, that portion between the pastern joint and the knee is unduly long, it is likely to cause the horse to be over on his knees. Too much attention cannot be given to the importance of the slope of the pastern because it has so much to do with the protection of the feet. Extreme length of pastern may cause a weakness, but it should be of sufficient length and slope to insure springiness.

The construction and set of the hind legs is of vital importance. A great many of the diseases to be found in these regions are largely due to a wrong set of the limbs. In a correctly constructed hind limb, viewing it from the side, a line dropped from the hindermost point of the slope should strike the top of the hock and continue parallel with it until the pastern joint is reached. If the conformation of the leg be such that the lower part of the leg is thrown more under the body, thus making it more subject to a strain of a tendon or ligament just below the hock, it is termed sickled hocked, and is very likely to become curby. If the opposite conformation be present where the leg extends backwards of a line dropped as previously described, fullness of the hock or bog spavin is likely to be the result. Spavins and ringbones are very often found on legs of this kind because of the fact that the bones do not have the proper slope in relation to each other. Viewed from behind, the legs should be set in a straight line, and if there be any deviation from a straight line the hocks should be inclined together, but never outwards, as a wide hocked horse is a drug on almost any good horse market.

The feet should be large, round, wide at the hoof head, not too shallow nor too high in the heels, and above all, constructed of a good dense horn, which indicates ability to wear well.

The action of a draft horse is a point which is receiving more attention than it formerly did. A horse, to command the very highest price, must move well. He must be good at the walk, and also do the trotting act fairly well. Length of stride and straightness of stride are the two most important points to be considered at the walk. Snappiness is also an essential. Height of action and flashiness are attractive, but not necessarily utility points. Winging, paddling or rolling action in front, and wobbling hocks are all features which every good horseman condemns, thus are discriminated against at all of the leading horse markets.

In breeding draft horses, too much attention cannot be given to the question of weight. At all of the leading draft horse markets, horse flesh sells at the rate of 25 cents per pound for each additional pound from 1,600 to 1,800 pounds; for 50 cents per pound from 1,800 pounds to 2,000 pounds; for $1.00 a pound from 2,000 to 2,200 pounds; and from $2.00 to $2.50 per pound from 2,200 pounds upwards, providing, of course, that the horse is sound, well made and desirable in every other respect. Thus the heavy ones are the kind we should all aim to produce because at best we will get plenty of the lighter weights to meet the demands for the same.

While a good horse can never be of bad color, still some colors such as the nicely dappled gray or blue roan are more in demand than others, thus commanding fancy prices. In discussing the advisability of the average farmer keeping pure bred draft mares, a somewhat new, but very timely topic is opened up for consideration. Just why the average farmer has not been keeping pure bred draft mares for a decade or more is one of the questions which amazes almost every man who has had any experience in the production of pure bred draft horses in this country, or has any acquaintance with the methods pursued in the production of horses in practically all of the European countries. Is there any more reason why the average farmer should keep pure bred cows, pure bred ewes, or pure bred sows than in the case of pure bred draft mares? Draft horses are needed on the farm to perform the necessary farming operations. Is there any good reason why a considerable amount of this work should not be done with good, pure bred brood mares? If the English farmer, the Scotch farmer, the French farmer and the Belgian farmer on their small farms find it profitable to keep a pair or two pair of pure bred draft brood mares to do their farm work, why should not the same policy be a wise one to pursue in this country. When this policy becomes more general on the rich farm lands of the central west, two things, both of which are very much in evidence at the present time, will gradually disappear: First, the importation of such a large number of stallions, many of which are a detriment to the industry, and, second, the presence of the glib-tongued chap whose business it is to organize companies of farmers to purchase these stallions at from two to five times what they cost on the other side of the Atlantic. In practically every one of the European countries in which draft horses are produced more than 75 per cent of the same are produced on the small farms and by the tenant farmers. These farmers not only require their pure bred draft brood mares to do the major portion of the farm work, but they also require them to rear a colt each year, which in turn is sold to pay the rent of the ground used. In this way these people have been able to pay high rents and in addition comfortably support their families.

It will pay the average farmer in this country to keep pure bred draft mares. It does not cost any more to feed a pure bred draft mare than it does to feed a grade mare of the same size. The pure bred mare will do just as much work as the grade mare. One good pure bred stallion colt at one year old will readily command as much money as will a pair of high class five-year-old grade geldings. The speaker has in mind at the present time a dozen or more farmers in Iowa, Illinois and Kansas who are using pure bred draft mares to perform their farm work, and in addition raising good colts from the mares each year. The stallion colts find ready sale when from one to two years, at from $400 to $700 each. These men have settled the question as to whether or not it will pay to keep pure bred draft mares. One farmer in northern Illinois attended a neighbor's sale in March, 1903, and in order to help matters along bid on a few things which he thought he did not need. He escaped trouble until a pure bred five-year-old Percheron mare in foal was led into the ring. He bid on her and she was knocked down to him at $300. He thought he did not need her, thus offered her to another neighbor for $290, but did not succeed in making the deal. He kept the mare and she has raised him a good colt each year. He has had the mare a little more than three and one-half years, she has done her share of the farm work, he has sold three of her colts for $1,250 and has one left for which he has refused the small sum of $500 before it was eight months old. Has this mare paid her way? The owner is a most enthusiastic breeder of pure bred swine, but he informed me last week that pure bred mares were even better property than pure bred sows.

I could cite you many other instances of a similar nature. Someone will say, but it is very easy to overdo this pure bred mare business. Has it ever occurred to you that in Iowa, the leading draft horse State in the Union, we have but one horse registered or eligible to registration for every 150 that are not registered? It will take some time to overdo this business. There is no good reason why our farmers should not keep pure bred mares of the very highest rank, and then by the judicious selection of sires produce home bred draft horses the equal, if not the superior, to that produced in any other part of the world. We have made good in cattle, in sheep, and in swine, so why not make good in horses?

This is a line of work which should receive more encouragement from our fair associations. While liberal premiums should be awarded for all classes of animals, more attention should be given to the home bred animals, and more especially those produced on the farm of the man with comparatively small means. It is the so-called average farmer that makes a county, a state or a nation, thus his interests are worthy of the most careful consideration of those entrusted with the management of the various county, state and national live stock shows.

THE PRESIDENT: This paper is before you for discussion.

A MEMBER: What could the average farmer pay for a pair of good mares?

MR. KENNEDY: I think from $800 to $1,000. A real good mare, three or four years old will sell perhaps for $500. You will have to pay $400 to get anything worth while.

QUESTION: I would like to ask what family of a draft horse you would prefer?

MR. KENNEDY: That is a question which largely depends upon preference. I think it is a pretty good business policy, in any line of work, to produce what is demanded in the community. If you are in a locality where they are breeding Percherons, breed them; if on the other hand you are in a neighborhood where there is no demand for them, breed something else for which there is a demand. I would say that another breed of horses that is gaining in popularity in the United States and in this State, is the Belgiums. The principal objection to the Shire horse is, that it is a very heavy boned horse, and you all know that a straight bone aids in selling a horse. I may say that I had a letter two or three weeks ago from Mr. Robinson, in central Kansas, probably one of the largest breeders in the central west. Mr. Robinson started with ten mares, Percherons, ten years ago, and a year ago he sold $70,000 worth. In our locality for a good pair of Percheron mares, you will have trouble to get them for less than $600. We should pay more attention to the breeding industry. There is no need of going across the water.' I hope there will always be some horses imported. The great trouble at the present time is, that 50 per cent of the horses that come from foreign countries should never come in. We want all the good horses we can get, and we should encourage our home industries. Our people seem to be satisfied to buy a home-bred bull, but when they buy a horse the inquiry is whether he is imported. I might say in our locality we have a home-bred horse, owned by Mr. Frye. I think he has done a world of good. I think he is one of the best types of horses I know of. Mr. Frye stands that horse at $25; he is a good individual, and he breeds well. Some people think that horse would be better if it was imported. Now, if we are going to make progress, we have got to get away from the idea that because a thing comes from the distance it is better. We have got to pay more attention to individuality and good breeding.

A MEMBER: I would like to substantiate what Mr. Kennedy said. I attended a farm sale where there was a pure bred mare offered for sale in 1897. I was not a man of much means, but I made up my mind, if it didn't go over $200 I would buy it. She was a black mare. She was knocked off for $210. The auctioneer could not find the buyer. He turned to me and asked me if I still made my bid good at $200. I told him I would. It was sold to me. Now, she has produced me five mare colts; one mare from her has got two colts and one has got one colt. I sold two stallions from her, one for $600 and one for $650, without any guarantee. I am not in the selling line and am not advertising, but I believe it would pay a man to buy good individuals, thorough-bred mares.

MR. REEVES: I would like to ask Mr. Kennedy if there is any extra difference in the texture of the hoofs. He spoke several times of the hoof being brittle but tough. I wondered if that was a charactertistic of the Percherons.

MR. KENNEDY: I don't think it is. You will find poor feet in pure bred horses and you will find them in those that are not pure bred. I know grade horses at the present time that have exceptionally good feet, and I know pure bred horses that have not.

THE PRESIDENT: The next paper is by Mrs. Harriet Wallace Ashby.

POULTRY ON THE FARM.

MRS. HARRIET WALLACE ASHBY, R. F. D. NO. 1, DES MOINES, IA.

I wish to suggest that it would be well for us to look where we are going with farm poultry, the character of our flocks, the care we are giving them and the results obtained, and that we should also look at the financial success won by large plants where poultry keeping is carried on by business men under business methods, and at the work done by our experiment stations.

When we realize how important a place on the farm can be filled by poultry we will turn our steps to the paths blazed by successful poultrymen, and make as much for our farm poultry as can be made anywhere; in other words, we will go along the line we are looking.

There are in America today hundreds of poultry plants where thousands of stock birds are annually raised, and where eggs for hatching are produced by tens of thousands. But the aggregate output of these places is as nothing compared to the aggregate output of the farms. Four-fifths of the poultry of the United States comes from the farms. Secretary Wilson estimated last year that we marketed twenty billions of eggs. He is satisfied, however, that we can increase this number by a billion, and as this seems to be an object worth working for he has added a poultry expert to the Department of Animal Husbandry at Washington to consider the problems of the hen and how to coax her to lay that extra billion of eggs.

If farmers want this extra billion of eggs, they can get them, and without the aid of a poultry expert. The hen does not require a scientifically compounded ration; we can grow all she needs on the farm; we need only convince the farmer that it is worth while, that the hen will pay a good dividend on her feed and care, and the increased egg yield is assured. The reason the hen is not properly appreciated as a money maker is because the income which she brings in is usually an unknown quantity, as few accounts are kept with the hen.

On the average farm the income from the poultry is credited either to sundries or other things. Where it is credited to the hens you will find a flock of well cared for poultry, for their owner has found that a flock of fifty hens will bring him in more money than two cows, and at less cost for food and care.

If Secretary Wilson could persuade the farmers of the United States to keep accounts with their hens, charging them with food and capital invested and crediting them with eggs and poultry marketed; if he could persuade them to feed their hens for one year as they should be fed, and credit them with the income received, he would furnish them with an object lesson more conducive to increased egg yield than half a dozen experts analyzing and compounding rations, and the increased egg yield would be assured.

I need not plead the cause of pure-breds against scrubs; more farmers than is generally believed keep pure-bred poultry. The quality of poultry at Farmers' Institutes is surprising. Where the farmer makes his mistake is not so much in the quality of poultry he keeps as in his lack of method. Too often he has no object in view but to keep hens. Whether we breed for eggs, flesh or fancy feathers, we must have an object, and work toward that for best results. If we want flesh we will feed for it, as will we also for eggs and fancy feathers, but feeding poultry is not merely filling their crops. We can fill them up on corn, but that is about as bad a thing as we can do. Corn is a good feed, but the hens fill their crops too quickly with the whole grains, and for best results it should be coarsely cracked, and fed as other grains, in deep litter, first sifting it to save the fine meal. Economy demands that we feed our farm grains as far as possible. Hens need a variety of grains, the farmer can grow them; they need exercise, if made to scratch for a living they will get it even in cold weather; they need green food, the clover hay mow, roots and cabbage is good enough for that; they need animal food, and they will not do their best unless supplied with it, this the farmer may have to buy, but the hens will pay the bills in the increased egg yield. One load of gravel will furnish grit for the winter on the average farm, and fifty cents' worth of time will prepare a good supply of charcoal. Hens will live through the winter on a grain diet, but diet restricted to grains is the most expensive which can be fed in its first cost, and is invariably followed in the spring by sudden deaths in the flock. Hens should have animal food in the shape of milk, green cut bone, or meat scraps, frequently, and a feed of green food each day for best results. The bulk which green food gives is as necessary for poultry as for stock.

But feed alone will not produce eggs; the hens must work. The same ration which with exercise would be a good laying ration, without exercise will fatten the hens beyond the laying point. For good, strong, hatchable eggs, feed all grain in deep litter, give grain, green and animal food, grit, charcoal and pure water.

The A B C of successful egg production is, abundance of food of the right kind, and work on the part of the hens to get it. When you have a good system, make no change in it.

I have placed the feed before the housing because the feed is always under the control of the owner, while the house often is not. There is no need of dwelling on the perfect house, the only essentials are freedom from draughts, plenty of light, and good ventilation. The best floor is an earth one, with from six to eight inches of sand, and on top of this from six to eight inches of litter, making a warm scratching place.

I think one of the greatest mistakes made by farmers is over-crowding. Roosting room only is all some people give their hens. Tell some farmers that for best results hens in flocks of from ten to twenty should have ten square feet of floor space, and in larger flocks six, and they laugh at you. The Maine experiment station has made some very interesting experiments along this line. Taking houses of the same size, and pullets of the same breed and hatch, they have repeatedly demonstrated that a house built for twenty-five with twenty-five in it will give more eggs than a house built for twenty-five hens with fifty in it, and at half the cost for food.

However skillful we may be in the mating, rearing of fowls and the production of eggs, we can not call ourselves successful poultrymen unless we are good salesmen. All eggs look alike to the grocer, unless he arranges differently. As matters now stand, the farmer who takes in a basket of new laid eggs to market in winter receives the lowest wholesale price of stored eggs. Farmers can and do pack their summer eggs for winter sales, but if the eggs are fresh, a farmer should no more expect to receive the price of stored eggs for fresh ones than he should expect to receive hot house fruit at the price of canned fruit. The way to change this is for the farmer to grade, and pack his eggs for the fancy trade. If he will pack his eggs in cartons, holding a dozen eggs, stamp them with his trade-mark, and stand behind it with his personal guarantee of the freshness and flavor of the eggs, he will get an advance over market price on every dozen sold. Grocers say they are willing and glad to pay a premium for new laid eggs, but that farmers are not regular enough with their deliveries to be relied on. They claim, and justly, that they can not afford to make a demand for an article and not be able to supply it. We have sold eggs so packed for several years, and have received from two to ten cents premium from the grocers. A thousand cartons costs but $5 printed with name and address. In what way can $5 be invested where it will bring larger returns?

If we make special efforts to get fresh eggs, and to have them reach the consumer while still of good flavor, we will create an increased demand at increased prices.

The hen is the originator of the sealed package. Unfortunately the fact that the package is unbroken is not a guarantee of the flavor of the goods. There are city families who do not know the flavor of a fresh egg. You know, it was a city boy who refused to eat his fresh egg because it had no taste nor smell to it.

I have confined myself to the egg side because when farmers solve the problem of successful egg production they have solved the problem of better poultry and more of it, and the egg question appeals more to the farmer because, as the Scotch say, "The eggs will pay for the horse before the chickens pay for the saddle." I might bewilder you with statistics of what the hen has done, of how her eggs annually equal the wheat crop in value, and of the length of time it would take her to pay the national debt; the national debt does not trouble you, it is your debt that hurts. Your hens properly managed will pay your debts, wipe out your mortgage and educate your children.

THE PRESIDENT: The paper is now open for discussion.

A MEMBER: I would like to ask the lady what her source of grain and green food is?

Mrs. Ashby: Clover hay, small potatoes, cabbage, beets, any of the root crops. If you don't have that, you can buy alfalfa meal.

Mr. Brennan: I would ask if you would cook the potatoes or use them raw?

Mrs. Ashby: It is not necessary to cook them at all. You can take a board and drive some nails into it and stick them on the nails.

A Member: What is your experience with condimental foods?

Mrs. Ashby: I don't like them. I wouldn't feed hens condimental foods.

A Member: How about sulphur and venetian red?

Mrs. Ashby: Venetian red is all right. Sulphur is fairly good if you don't feed it in wet weather.

A Member: Which is the best variety?

Mrs. Ashby: That depends upon the man. Every man has his own choice, just like every man likes his own wife the best.

A Member: How about the scours?

Mrs. Ashby: I think it is because they are not kept warm enough; sometimes because they are not hatched right. You take an egg which has not a strong life germ, and the chickens are not strong.

A Member: Is there any external application of fluid or powder that you can apply to your chickens or hens that will make them immune from mites?

Mrs. Ashby: Only so long as the powder remains strong enough.

A Member: Do you have any trouble with young chickens sprawling when they first hatch?

Mrs. Ashby: I think under those circumstances the germs are not strong enough. If you have an incubator in which the temperature varies from 95 to 108, the chicken is weakened before it is hatched.

A Member: What is the reason for so many cripples from an incubator, when the same eggs are hatched by the hens with no cripples at all?

MRS. ASHBY: Some people claim those are the last hatched, and sometimes I think the eggs are not turned properly.

QUESTION: Don't you believe that those crippled chickens you find in the incubator might not be from the eggs the hen would kill when they first hatch?

MRS. ASHBY: That is possibly true.

A MEMBER: In a hatch of 260 eggs in the incubator and the same number of hens, we would have as high as thirty cripples in the incubator, when there wouldn't be one from the hens, when the same eggs were divided properly between the hens and the incubator.

MRS. ASHBY: Have you noticed when the young chickens come out that they are perhaps damp, and that the temperature is really lower than it should be. I think when the chicks knock over the thermometer we do not always see it.

THE MEMBER: In the last hatch of our incubator last spring, the thermometer didn't vary one degree, and there were a little over thirty chickens that were cripples.

MRS. ASHBY: Perhaps I can answer that better by telling a little story. There was an Irishman who was traveling on a railway train. He got very hungry, and when the train stopped at a certain station he got off to get himself a little lunch. Before he had his lunch, the bell began to ring and the train began to pull out. He came running along and yelled at the top of his voice, "Hold on that steam engine of yours, ye have a man on board that has been left behind." (Laughter.) I think, possibly while you have told me all you know about that, there is something behind. Perhaps there was something the matter you didn't just know.

THE PRESIDENT: The next paper is by Professor Curtiss, who will address you on the following subject:

WHAT THE IOWA STATE COLLEGE IS DOING FOR THE BOYS AND GIRLS OF IOWA.

PROF. C. F. CURTISS, AMES, IA.

The function of the Iowa State College is manifestly to serve as the educational center of the agricultural and industrial interests of the State. A detailed description of the curriculum and lines of work and investigations will not be attempted here.

Collegiate training has come to be regarded quite as essential for successful industrial work as for the professional callings. Cases of successfully self-educated men, in the common acceptance of the term, are becoming more rare each year. In a broader sense, the young man who by his own industry and efforts earns money to obtain a college education is self-educated in the best manner. Professor Crane of Northwestern University estimates from carefully compiled records, covering over 10,000 cases, that the boy with a common school eduaction has but one chance in 9,000 of achieving eminent success in his chosen calling; with a high school education, he has one chance in 404, while the boy with a college education has one chance in 42. It appears then that a college education increases a boy's chances of success, according to these records, over 200 per cent.

The need of higher training for industrial work was uppermost in the mind of the far-sighted statesman, Senator Morrill, the author of the bill creating the land grant colleges. He pleaded for the education of the artisan, the farmer and the mechanic, and the land grant colleges came into existence primarily for that purpose.

For many years these colleges made slow progress. Their methods were crude, and their equipment meager and inadequate.

Agricultural and industrial education, to be of the greatest service, must be made practical as well as technical. The cultural value of education is undiminished; but the economic value is greater. We educate primarily because it pays. Industrial efficiency has become the watchword of technical training for the farm and the shop.

State colleges are appreciated, patronized and supported in proportion as they are serviceable to the interests which they represent. So well have the colleges met this standard of late that they have been overwhelmed with the local demands and students are coming from foreign countries. The college takes up the work where the high school leaves off. The foundation is laid well in the sciences, in mathematics, history and the languages. The sciences are studied with reference to their application to practical problems. The inherent reasons, the principles, the why, are sought and emphasized in training students for agriculture.

Whatever may have been the condition in the past, it can no longer be said that the agricultural colleges are not training boys for the farm. The majority of all the boys taking courses in agricultural colleges are today returning to the farm, and fully 90 per cent are taking up agricultural work in some form. Each year we have among our agricultural graduates at Ames some of the strongest young men who return to their home farms in preference to considering a salaried position at any compensation. These men are fortunately situated. Others prefer to accept salaried positions for a time until they can acquire farm property.

The salaried positions in agricultural work are constantly widening, and presenting better opportunities. On every hand there is a recognition of the value of higher technical and practical training for agriculture. Not every college trained man will be successful in agriculture or in any other field; but other things being equal, the college trained man has tremendous advantage.

President Van Hise of the Wisconsin University said in substance recently in addressing a national association of educators: "The college authorities should go into every high school of their States and present to the pupils in the most forcible way the opportunities open to the graduates of agricultural colleges. No kind of education today offers to its graduates such sure and safe returns at such good compensation as are open to young men who take a thorough course in agriculture."

The Iowa State College has an annual enrollment of about 350 students taking the four-year course in agriculture; and about 700 in the short courses, making a total of over 1,000 agricultural students each year. We have in addition over 100 veterinary students taking agricultural instruction. This surpasses the fondest dreams of those connected with the work a few years ago. But the conditions of Iowa demand, and we should not be satisfied until we have at least 1,000 students taking a collegiate course in agriculture, and 10,000 taking short courses, ranging from one to three years in agricultural high schools or academies. I confidently expect to see this result attained in the near future. No investment that the State could make would pay better dividends.

The Iowa State College is doing much aside from the instruction of its resident students. Through an extension staff, organized in accordance with an act passed by the last Legislature, it is conducting demonstration experiments on ten county farms of the State, and giving instruction in stock and grain judging, in growing crops, farm management, orcharding, dairying, domestic science, soil fertility, good roads and other phases of agriculture, in two regularly organied local short course schools; and in farmers' institutes, in two-thirds of the counties of the State. It has covered over 3,000 miles of railroad and reached 140,000 people by special trains. For this work the railroads deserve the credit of furnishing free train service and bearing all incidental expenses.

The county farm experimental work and boys' and girls' club work has been highly popular and produced good results. Sioux and Keokuk counties have been particularly successful in the boys' and girls' club work.

Three years ago the Sioux County Farmers' Institute passed a resolution asking the Board of Supervisors to set aside a plot of land upon the County Farm and to also appropriate a sufficient sum of money to allow Sioux county to establish a series of experiments, co-operating with the Iowa Experiment Station at Ames. The Board of Supervisors took favorable action and H. H. McKee, steward of the County Farm, was instructed to take the work in hand. This was the beginning of the present movement of County Experiment Stations.

A prominent feature of the work has been the annual County Farm picnic. People from all sections of the county come in to study the various experiments and to visit, meet friends from distant parts of the county and take part in the program that occurs during the day.

The Board of Supervisors, consisting of B. F. Hawkins, H. J. Van de Wan and J. C. Emery, co-operating with the Farmers' Institute and assisted by the steward of the county farm, H. H. McKee, conceived the plan of encouraging the farm boys and girls to take greater interest in the Farmers' Institute work and to also determine the possibilities of Sioux county corn soil.

The plans were not widely known until the past year. Former years failed to bring out many responses. In the spring of 1905 the County Experiment Station distributed a small amount of Reid's Yellow Dent seed corn. The county superintendent and school teachers throughout the county took an active interest, and fifty-eight boys and three girls applied for corn and instructions as to the manner of planting, etc.

Each contestant was to grow one-quarter of an acre (measured by an appointed member of the Farmers' Institute committee). A blank form with space for notes was distributed. Each was asked to keep a record of the manner of fitting the land; what fertilizer, if any, applied; when planted; how and what method (checked, drilled or planted by hand); how many times and when harrowed and cultivated; date of first killing frost; when harvested.

The following table shows the result of the experiment of the sixteen highest yields:

Name and Address.	Bu. per Acre.	Price.
Mart McCabe, Boyden	137.5	$40.00
R. M. Emery, Carnes	130	30.00
Arthur Weir, Boyden	128.5	20.00
Evert Edes, Boyden	128	15.00
Matthew Weir, Boyden	127.5	10.00
Peter Mouw, Orange City	122.5	5.00
Earl Farringer, Ireton	100	3.00
Lynn Folger, Alton	99	3.00
Anglo Quinn, Hull	96	3.00
Theo. Hemstra, Orange City	86	3.00
Minnie De Boer, Alton	82	3.00
Willie Vander Kool, Hull	82	1.00
Floyd Helder, Inwood	78.5	1.00
Bert Vander Schaaf, Hull	77.5	1.00
Clarence Hawkins, Hull	77	1.00
Samuel Kimmel, Sheldon	74	1.00

Earl Farringer of Eagle township, ten best ears, received the suit case as a special prize.

Misses Minnie and Rosena De Boer of Alton each received $3.40 special premiums.

The Board of Trustees of the Iowa State College at their last meeting voted to give a free short course scholarship to each regularly organized Farmers' Institute in the State.

The college has furnished stock and grain judges for over half the county fairs of the State. This demand, which is greater than can be met, has grown without solicitation and as a result of recognition of the practical value of the college work along these lines. The young men who do this work are not infallible in their judgment, nor are older men; but the system has grown on its merits, and the same fairs are sending for judges year after year.

The Experiment Station bulletins reach practically 100,000 readers. The Experiment Station staff is constantly employed in investigating every disease, pest or problem threatening to in any way menace the success of Iowa agriculture. In response to special inquiries, the college and station officers write over 60,000 personal letters annually pertaining to agricultural conditions and problems.

The college entertains not less than 25,000 visitors annually, who come on excursions or otherwise, because of interest in the work of the institution. The college students and products have come in competition and won notable victories. The college is training young men to higher ideals and higher achievements in successful farming and good citizenship.

Notwithstanding all that is being done, however, the field is only partially covered. There is a demand for much more. A recent investigation reveals the rather startling fact that correspondence schools located in other States have over 30,000 pupils enrolled in Iowa. There is a demand for correspondence instruction conducted by Iowa institutions. There is a demand for a sympathetic, well organized farmers' reading course.

The great mass of the farm boys and girls of Iowa are barred from entering college by the deficiencies of the rural school. The city high school does not satisfactorily connect the rural school with the college. There is a constantly growing demand for a better system. The agricultural high school may partially meet this requirement, though its chief function will doubtless be to give agricultural instruction of practical character, on a less extensive scale than the colleges. Agricultural high schools have been organized in eight or ten States, and they are growing in favor. The Georgia legislature has just passed an act providing for an agricultural high school in each congressional district of the State. The rural and city school-teachers of the State, to do their work most efficiently, should have help from the college in introducing agriculture in their classes. A summer school should be held for this purpose.

To meet the demands of the farmers' institutes, short courses, fairs, county farms and other organizations looking to the college for help, the agricultural extension force should be fully twice its present size.

The rural schools are in need of bulletins and literature that will interest the boys and girls in nature study and in plants and animals and the things about them on the farm.

A modern college of Agriculture and Mechanic Arts must do more than give instruction to resident students. It must identify itself with all phases of educational work pertaining to the industries it represents. To be in position to render the greatest service to the industrial interests of the State it must be identified with the activities of the people from the rural schools up through the colleges and to the practical affairs of their daily work. It is this larger service in its broadest sense that the people of Iowa expect of their State College of Agriculture and Mechanic Arts, and this is the service which the institution is endeavoring to render.

The President: This paper is open for discussion.

A Member: How are you going to award those scholarships?

Prof. Curtiss: No plan has been devised by the college authorities. The action is something like this: The scholarships are offered to each farmers' institute upon such conditions as the officers may deem best, with the suggestion, however, that they be offered for some form of competition, such as stock or grain judging. Quite a number of county institutes have suggested plans of this kind; others didn't know whether it would be practical or advisable. So that the college authorities in awarding these scholarships do not fix any conditions under which they would be granted, but leave it to the officers of the institute as far as practicable, to be placed upon some form of competition.

The Vice-President: Owing to the fact that Mr. Stickney will deliver his address this evening, our program for this afternoon is cut somewhat short. Mr. Collingwood, who spoke to us this morning, has kindly consented to give us another talk this afternoon. We will be glad to hear from him now.

Mr. Collingwood: I would like to speak for a few moments about this matter of educating our farm boys. I think that our system of education in the East, as I understand it, is at least partly wrong. When we tried to get an appropriation to build our Agricultural College in New York, a strange thing happened, and that was, that the hardest opposition we had came from the classical colleges. Whenever we had a hearing at the state house, before the Governor or the Ways and Means Committee, there were from seven to eight college presidents ranged up against us in every move we made for a uniform agricultural education. These men said, that the old classical ideas of teaching the boy the dead languages and the higher mathematics, was the only thing that would make a man out of them. Now, just think of it. Chancellor Day of the Syracuse University, who was the hardest fighter, made this point: When a farmer takes his scythe to a grindstone and sharpens it, he sharpens the blade, and then does not take a piece of the grindstone with him, and the same thing was true when he sharpened his mind on Greek and mathematics. I told him any farmer I ever saw sharpen his scythe on the grindstone, always put a whetstone in his pocket when he went out in the field, and that was, that the hardest opposition we had came from the clas- an agricultural education; that the latter gives the farmer his grindstone and his whetstone.

We now have the appropriation, and we are doing the best we can to work it out. The spirit of the old universities—Yale, Harvard, Princeton, Amherst, in my judgment, is dead. I will tell you why I think so. A large number of students are simply there spending the money which their fathers and grandfathers, and their ancestors earned. Out here, it seems to me, that just exactly the reverse is true. We have a class of producers, the farmers' boys, who are producing something; and the producer is always a more hopeful, energetic citizen than the mere spender. Let me just say a word to some of the old men who have boys. It may be that you in your youth did not have the opportunity to go to college to get an education, which you may now see would have been of great benefit and help to you, and some of you no doubt would say, that if you had your life to live over again, you would do the best you could, you would deny yourselves many things and fight for an education. Now, gentlemen, if you have boys at home growing up, who at some time in the future will take your place, try and give them a useful and practical education; try and do it; try and put them somewhere where you are sure of them, and where their character is kept clean, pure and true. I believe you have a school right up here at Ames, where I would like to send my boys. The only trouble is, if I send them out here, in this rich country, when they came back to the stony hills, I couldn't keep them there. But there is that one thing,—sentiment. If it hadn't been for that sentiment, "There is no place like home," if it hadn't been for that, the people would have pulled up stakes and come here. That love of home, which holds a man away up in Canada among the snows, and away down in the south—no place like home. The trouble with the Yankee was, he wanted to hang on to that dollar too tight. He couldn't realize that half a dollar invested in a boy was a good proposition. Booker T. Washington told me a story of a boy who was caught stealing chickens—to save his life, the boy couldn't help stealing. Finally his master said to him: "If you steal another chicken I am going to take you up in front of the big house, tie you to a tree, and I am going to ring the bell and get all to see you, and the overseer is going to lash you, if you steal another chicken." He went along for three weeks. One Sunday night he heard a rooster crow; the temptation was too strong, and he went in and got the bird. He took it home, and dressed it and was in the act of eating it when the master came in upon him, and there was John eating it. The master started to carry out his threats, so he rang the bell, they built a great fire, tied him to the post, but the master's heart failed him. So he went up to him and said: "John, tell me now, why did you steal that chicken?" He said: "Massy, I will tell you; you owns this nigger and you owns this here chicken; we both your property; when I steal that chicken, you ain't losing nothing; you may lost the chicken, but you got Mr. Nigger." (Laughter.) The trouble with the Yankees was, they wanted to have a few more dollars before they had more man.

If it is possible for you to plan it, send your boys up to Ames and try to keep them there, and they will come back a credit to you. One trouble with this scientific education is, they are trying to make it too scientific. The chemist and botanist puts too much dependence or importance on the science of it; looking through a microscope he thinks is more important than working it out by hand. I can make my point clear by another story. There was a time in Maine when they passed an inspection law, prohibiting the sale of game. They passed a law making it a crime to take quail out of the State, and they had under it a system of inspection, and they put a scientific man in charge of that work. That man was a pure scientist; he had studied the habit of the quail, how they flew, when they were ready to shoot, all about them, found out what kind of worms they consumed; he had that matter down to a very fine point. He went around hunting up his inspectors, and at one place he found an old man, a farmer, and the scientist and this farmer got into a discussion. He told the farmer he hated to have such a man at this place and he was going back to have him removed. That made the farmer mad. He said to the professor, "Looky here; I have got a dog that knows more about this business than you do." Now, this dog was one of the most ornery looking curs you ever saw. The old farmer says, "I will prove it to you; there are a lot of people coming, one has a violin case, five men with trunks, five men with sachels, and there is a boy with a grip-sack; you find out whether there is quails there." The scientific man says, "How can I tell?" "Well," said the old farmer, "we will try the dog." He says, "Shep, sick 'em!" He ran over and put his nose to the trunks and valises, and when he got to that woman with the violin case, he stuck. The violin case was opened and there were thirteen quail in that violin case. He says: "Professor, you may have the science, but you ain't got the smell." (Laughter.) Now, I suppose you have the point I am trying to make. That man could analyze paris green, fertilizers and milk, but he could not analyze smell. That instinct, that power the dog had is a practical illustration of the practical man instinct. The two have got to work together; one cannot say he has no use for the other; they must work together in order to do this thing right.

They tell me, up in New Hampshire there was once a boy who wanted to go to the agricultural college. The father said no. The boy says, why not? Why, the father says, they teach book learnin' up there, and that is no good. The boy wanted to go and after studying the matter over, he said to his father:

"Father, you are a good farmer, ain't you?" "Oh, yes, I am a good farmer." "Uncle John down below here is a good farmer?" "Yes, one of the best in town." "Uncle Bill here in town is a good farmer?" "Yes, one of the best." "Aunt Mary's husband, how is he?" "One of the best in his town." "Now," said the boy, "suppose you and Uncle Bill, John and Aunt Mary's husband all got together and sat down and had it printed in a book, would that be book learnin'?" He had the old man; he demonstrated to the old man that knowledge lost nothing by being put into print. The old man examined the college and the boy went. When a thing goes into a printed page it is not spoiled for usefulness.

Since my talk this morning, several questions have been asked me. In the first place, a man asked me, if it is true, that in the East it is likely they will raise more beef cattle in the future. In answer to that, I will say, yes; my estimate will be that in ten years from now, there will be two or three times the number of beef cattle there.

The labor question in the East is a hard one. Some of you men may think you have a hard time with hired help. I do not think you are having the trouble we are. In the great cities of the East, I could show you thousands of men, big, stout, broad-shouldered men, capable of doing a good day's work, sitting down in the park, or lying down on the grass, or loafing in front of a store, doing nothing. If you go to one of these men and ask them whether they want a job, they will look at you and may ask you what kind of a job it is. You tell them farming, and the response will be, "What do you take me for; for a dead one?" How do these men live? Through the aid of the charity organizations, they get their breakfast and supper. Now, these men will never leave the city until driven out. Now, whenever we get hold of a good man, who turns out to be a first class manager, some wealthy man takes him away from us, offers him twice what we can afford to pay. Now we are obliged to care for our stock ourselves. I have a great respect the hog, myself; my hogs pay me well. I can turn a hog into an orchard, and they pay me more for my seconds and thirds than the commission men. My judgment is, that within ten years, all over New England and through the east they are going to produce a large amount of beef. I don't believe it is going to compete seriously with you people, because the demand at the same time is increasing. I went into a butcher shop at Omaha and I found I could buy a first class steak (sirloin) for 12½ cents. What do you suppose I pay for that kind of beef at home? Twenty-six cents a pound. That is what I pay there for the same quality of beef.

Just one thing more. I never get a chance to talk to such people as you without closing with some reference to the better side of farming. It is all right, friends, to pile one dollar up on top of the other. What in the world are our old farms good for, if not for the saving and rearing of good men and women. You men are here, you left your women folks behind. I am here; back in New Jersey is my little home; I would fight for it; better than that, I live for it. Men go away from home, they put on their black clothes, they throw out their chests and say, I did this. But go back to the kitchen stove, inside of the house; there is the daughter, the women folks, where you will find the foundation of unity. A man is a show piece: in nine cases out of ten he is like the hands that go around the clock; the patient, willing, uncomplaining silent workers at home are doing the work.

Just after I bought my farm, in May, the most beautiful season of the year, I took my children walking over the hill, and we got into the woods, and there was a little glade, and in the center there were two lilacs growing. You never see a lilac growing wild up in these abandoned farms. The house was destroyed, yet the lilacs were there. I didn't know where it came from, the children knew nothing about it, and in their great happiness they never thought of it. I knew there was a home there once. I went back and asked my old neighbor. He told me that sixty years before that time a man went into the forest with his wife and children to cut out a home. All that he had in the world was his honor and love for his family. He took the ax and built the house, cleared the forest, planted his garden and orchard, and he worked as man will work; only will work to make a home. And the wife did her share; that woman was patient in time of trouble; she held her peace, though her heart was breaking. She raised her children in the fear of God, and she planted the lilacs in front of the door.

Well, my friends, the story goes, the man died; the woman followed him; the children were scattered; a tramp set the house on fire and it burned down to the ground; what was once a home was only the dwelling place of wild beasts. I want to know why it is that the only spot which was left to show there was a home there, were the lilacs; I want to ask you why the man's work was blotted out—we know not what he did with the labor of his hands—and the only thing that is left is the work of the weak, hopeful woman who planted the lilacs at the front door. I will tell you why they are left. It is because they stood for the spiritual side of the home; they stand as those things always do, for the hunger and thirst of the human heart, the hunger and thirst of the human soul, which will not be satisfied, and I say, thank God, can not be satisfied with the mere labor of the hands, but goes on striving, it may be hopelessly, for these things, eternal in Heaven. Think of that my friend and brother, that the silent work of women folks in the home will live, and live through all history, after your proud work of the soil may be done.

Gentlemen, again I thank you.

THE PRESIDENT: We will now stand adjourned until 8 o'clock this evening, at which hour a joint meeting with the Corn Belt Meat Producers' Association will be held at the Y. M. C. A. Hall, where Hon. A. B. Stickney will deliver an address on the subject of "Railway Freight Rates."

JOINT SESSION

OF

STATE FARMERS' INSTITUTE

AND

Corn Belt Meat Producers' Association

Y. M. C. A. AUDITORIUM

8 O'CLOCK, TUESDAY EVENING, DECEMBER 11, 1906

The joint meeting was called to order by President Morrow of the State Board of Agriculture, who introduced Vice-President Maher of the Corn Belt Meat Producers' Association as chairman of the evening.

In introducing Hon. A. B. Stickney, president of the Chicago Great Western Railway, as the speaker of the evening, Mr. Maher said:

"I am now introducing to you President Stickney of the Great Western Railway. He has been the farmer's friend as long as I can remember, so far as a railroad president can be the farmer's friend. Mr. Stickney's road is never represented at the legislature here by lobbyists. He was our friend when we made the fight to get back the return pass. He is a man of wide experience, and I am sure that we will all be benefited by what he has to say to us this evening."

RAILWAY FREIGHT RATES.

A. B. STICKNEY, PRESIDENT CHICAGO GREAT WESTERN RAILWAY COMPANY.

The subject which I am to discuss this evening is the importance of a simplified schedule of rates under the interstate commerce law.

The fundamental fact of railroad rates, which cannot be too often repeated, is that a railway is a public highway, performing service under the license and control of the state. By "state" I do not use it in the limited sense, as the State of Iowa, but by "state" I mean by the sovereign power—that indefinable something that is the ultimate sovereign of all civil governments. A public highway is a thing on which one man has as good a right as another man. The man who owns a building that costs a million dollars, fronting on a street of Des Moines, has no more rights on the streets of Des Moines than the man who owns nothing. So, one man has the same rights, and should be treated exactly the same as another man on the great steel highways on which the commerce of this country is carried and must be carried. This has always been the theory of railways. You know that the history of railways only extends over a little more than half a century. When I was a boy there was hardly a railway in the United States; and I may mention as a matter of curiosity here that the first steam railways that were built in the United States were built for the purpose of carrying passengers, just the same as our electric lines are built today. There was no more idea or conception of moving freight across the continent by railways than there is of moving freight across the continent by electric lines today. You read the early prospectuses of the railroads of Massachusetts, and they all build up on the question of passenger business—how many passengers they carried, and how much they could get for carrying them; and it was eight or ten years, if I recollect right, after the Baltimore & Ohio road was started before they ever carried as much as 5,000 pounds of freight in a single year. The railroads were then new. When they began to build in this country we were all in favor of railroads. We would go to the legislature and we would vote them anything they asked. "Only build us a railroad. We don't care what you ask. That's all we want."

Most of the early charters in this western country—in these so-called granger states—give in terms to the directors of the corporation the absolute power to make such rates as they saw fit. The people—the people in all new countries—are improvident. They want something, and they want it awfully bad, and they don't stop to criticise very carefully what kind of a contract they make. Now, these railroads came into existence under these conditions. The philosophy of it, which has since been reasoned out and argued out and decided by the courts, wasn't thought of, wasn't understood. Everybody thought that the railroad was like any other owner of property—that they owned the railroads. It was their property; they could carry freight for one man at one price and for another man at another price. This wasn't doubted for a great many years, and so it grew up—the railroads came into existence and grew up without any legislative power for the control of rates. As long as there was no objection—as long as there were no competitive lines—there was no discrimination, as a rule, between individuals. If there was any discrimination, it was a discrimination in favor of some relative or some friend, which, of course, is a most unjustifiable discrimination; but I am simply repeating history. But as soon as there came two railroads competing for the same business, then this discrimination began to grow. The larger shipper—the man that could control the largest amount of freight—he was given better terms. It was a case of bargain and sale now. The railroad says, "If you will ship all your stuff over our line, we will give you such and such a rate." It was a question of bargain. And then, in a little while that man's business began to grow and grow and grow, and his neighbors in the same business began to fail and fail and fail, and in a little while this man that had received the discrimination in the first place got to be bigger than the railroad, and he would tell them what freight he would give them, and they had to accept it. That is the way this discrimination grew up.

Now, gentlemen, the interstate commerce law was a law passed for the purpose of preventing all kinds of discrimination as between individuals, as between places, as between commodities. The method that the commerce law has adopted to prevent this discrimination is found in the sixth section of the law, which provides that railways must make a schedule of rates between all places on its own line, and the new law says on its own line and on other lines. In other words, the law requires that a schedule of rates shall be made between every railroad station in the United States; that when these rates were made—when these schedules were made—they should be filed in every railway station for the inspection of the public, and the new law requires that they shall be kept filed in railway stations for the inspection of the public in such way that they can be reasonably and easily inspected. Now, that is a big contract, as I will show you later. After these schedules have been made, the law says that the railway shall receive neither more nor less than those rates from any shipper, under a penalty of twenty thousand dollars for each offense against the law. The law says that if any officer of a railroad company, or any agent of a railroad company shall by any device whatever accept or receive a greater or less compensation, that officer shall be subject—that agent—it may be an agent that receives only three or four hundred dollars a month—shall be subject to a penalty of twenty thousand dollars, of not less than one thousand nor more than twenty thousand dollars for each offense, and in addition to be imprisoned in the penitentiary for a period of not less than one year nor more than five years. Now, those are the enormous penalties that are imposed upon the railroad corporation and the railroad officers and agents. This same law says that if you, gentlemen, as shippers, shall solicit, accept or receive any rebate, or by any device get your freight passed over the railroad at less than these schedule rates, you, individually, shall be subject to a fine of not less than one thousand dollars nor more than twenty thousand dollars for each offense, in addition to which you shall be subject to imprisonment in the penitentiary for a period of not less than one year nor more than five years, and in addition you shall be liable to forfeit to the United States three times the amount of the discrimination, or the value of the discrimination which you shall receive.

Now, gentlemen, these are the conditions that the railway companies and the railway officers and shippers are up against under this law; and you will notice the shippers will get the worst of it.

Now, I say, gentlemen, that under the enormous penalties that are imposed by this law (and they are being enforced, as you will see every day in the newspapers—that is, the penalties of the old law, which did not include imprisonment), I say it is unfair to the shippers of this country to hold their fortunes and their liberties subject to the accepting and receiving of rates on freight which are published in such a way that you nor any other living man on earth can tell by an investigation of six or seven weeks what the real legal rate is.

Now, gentlemen, it has been a doctrine that I have been preaching ever since the interstate commerce law was passed that it was the duty of the railways to devise some means by which they could publish their schedules in such way that a person of ordinary understanding by inspection of the schedules could determine for himself the legal rates in all cases.

My first attempt at this was shortly after the law was passed in 1887, when old Judge Cooley, who was a very able jurist, was chairman of the Commission, and when the Commission was composed of probably abler men than have ever sat on the Commission since, unless we except the present Commission, who are largely new men and I do not know what their capacity may be. I induced the railroad commissioners of Minnesota to file a petition with the Interstate Commerce Commisisoners to compel the railroads to publish their tariffs in proper form. The Commission, pursuing their usual practice, subpoenaed the twenty railroads that center in Chicago, to bring with them their tariffs, and to prove or show whether they were published according to law. I well remember that meeting. It was in a room about the size of this, and there were two tables down on each side, and the commissioners were ranged on the platform like this. Judge Cooley looked over and on this table; in front of each traffic man was a pile of tariffs. Judge Cooley looked over and he saw the traffic manager of the Chicago & Northwestern road—his head just appeared above an enormous pile of tariffs in front of him. Said he, "Mr. Wicker, you may be sworn." Mr. Wicker stood up and was sworn.

"Have you got your tariffs with you?"

"Yes, sir."

"Where are they?"

"Here they are." (A pile of tariffs as big as that table down there.)

Says he: "How many tariffs are there in that pile, Mr. Wicker?"

He says: "Oh, I don't know; there's somewhere from three to five thousand, I suppose."

"Are they published in such a way that a man of ordinary understanding can determine the rates for himself?"

"No, sir."

"Are they published in such a way that you, Mr. Wicker, by inspecting those tariffs can tell the legal rate?"

"No, sir," he says; "but I would modify that. Yes, I could tell if I spent the time to go through them and sift them out and examine them—I could probably tell," he says, "but it would take me three or four weeks to determine with certainty as to the actual legal rate on any commodity."

"How do you determine what the rates are?"

"Well," says he, "I have a clerk that has these tariffs in charge. He has them sorted out and filed, and," says he, "when I want to know a rate, why, I ask the clerk, and he tells me, and I suppose that is the legal rate, and so it goes." He says, "I don't mean to say by that I don't know the most common rates—the rates on wheat, on grain to Chicago, and the rates on live stock—those common commodities that are shipping all the time. Of course, I know where to find those." But with the great multitude of commodities that are shipped on railroads he didn't know what to do.

Well, Judge Cooley looked at the other commissioners, and he looked at the commissioners on this side of him, and he motioned to one of them, and they got their heads together, and the judge turned around, and, says he:

"Gentlemen, the Commission has got an appointment tomorrow, and I see this is going to be rather a long job," and, says he, "we will adjourn until some day to be fixed hereafter. We will notify you."

He never fixed the date thereafter.

Well, the second public attempt—you might say public attempt—which I made was just before the taking effect of this present law. I attended a meeting of traffic officials and railroad officials in Chicago, to advise together and see if we could come to an understanding of what the law meant. Of course, all laws have to be construed. No law is so absolutely plain that there are no difficulties about it; and the meeting was called to order, and three or four traffic officials cracked some conundrums about whether a rate that was made in Shanghai ought to be published in Shanghai or San Francisco, or somewhere else, and it didn't seem to me to be getting along very fast, and I said: "It seems to me, gentlemen, the more important question is to know whether we can publish our rates in such a way that a person of ordinary understanding can tell by an inspection of the schedules what they are." Well, they didn't do a thing to me but practically kick me out of the room. They immediately got up—somebody got up and moved that the meeting adjourn and a committee be appointed to consider all these things.

Then I went to Washington to the Interstate Commerce Commission, and I appealed to them. I says: "Now, here; this law says that you shall make a schedule; you shall print it; you shall publish it. If you want to change it, you shall either reprint it with the changes in it, or you shall get at the schedules that are already printed and make it appear on that. Now," says I, "instead of doing that, whenever they want to change, they file another tariff which they call an amendment, and change one or two rates here and one or two rates there, and in a few days more they will file another amendment and another amendment and another amendment, so that in the course of time if you got hold of any schedule and you wanted to know what the rate was, you get at the original schedule, you will find one rate, and then if you hunted through 7,000 or 8,000 tariffs you would find that there had been amendment No. 1; you might find No. 2; you might find No. 3; you might find No. 4; and I have known as many as one hundred amendments to a single tariff.

Now," I said, "Gentlemen, you have no right as commissioners to file these amendments or allow them to be filed. They are purely illegal documents, and you have no right to file or receive an illegal document." Well, they says, "what can we do? Nobody knows how to make such a tariff, such as you desire, and we don't know how to make it." "Well," says I, "just refuse to receive these amendments." "Well, but it will stop the business of the company." "Well," says I, "great goodness! You have just got filed in your archives here over three million tariffs (that is true—just think of it—over three million tariffs); don't you suppose the business of this country could run for a few months if there wasn't any more tariffs made?" "And," says I, "if you will refuse to receive any more tariffs, why, the railroads will have to get to work in some way and get this thing in shape."

Well, the Commission didn't feel quite equal to that. I want to tell you that every man on that Commission is not a Theodore Roosevelt by any means. I think if Mr. Roosevelt was on that Commission he would have accepted my proposition, and said we will refuse to receive any more.

Well, now, it is pretty hard work to talk about these subjects without casting a great deal of blame on to the railroad companies. They are by no means blameless, but they are by no means the miscreants that they are sometimes represented to be. They are creatures of circumstances.

Now, it don't matter what my opinions are, I believe that a tariff could be made that could be understood, over the Chicago Great Western road; that is, their local tariffs. Of course, I could not make joint tariffs with other roads without their consent, but if I put in a tariff of that kind on the Great Western road, and left the others to flop around as they pleased, why, they would skin me to death. I wouldn't have any railroad; I wouldn't have any business in a little while. So, one man can't do this alone. All of the railroads have got to do it, or else the railroads that stay out will have such an advantage over the others that it would be unfair.

Well, now, when you undertake to get the unanimous consent of three or four hundred railroads you can easily see what a tremendous job it would be. Say there are 500. Say that 480 of them wanted to do what was right; wanted to obey this law; wanted to do just what was right, and that twenty others would not—why, the 480 could not, without sustaining tremendous loss. So, gentlemen, I despair of ever getting simplified or understandable tariffs, as a whole, unless the power of the law is invoked—unless the right arm of the government will compel the few that want to get an advantage over any other to give in and obey the law.

Now, I don't want to leave the impression on your minds that the Interstate Commerce Commission is indifferent to this. They were not prepared to take the stand that I suggested, but they have taken the matter up in earnest and they are going to bring it out before they get through—they are going to the extent of their legal authority, in bringing this out, and if they lack some little authority I think they will be able to get it from the legislature.

But now, gentlemen, it isn't a simple thing to do. It isn't an easy thing to do to publish a schedule of that kind. Now, I will give you a few figures. There are 25,000 railroad stations in the United States—a little more, but we will call it 25,000. Now, to make one rate—say the first-class rate—between these 25,000 stations would require 312,500,000 rates. Just think of that—312,500,000 rates! Now, there are 8,000 articles, in round numbers, that are shipped by railroads. Now, if they were going to make a rate for each one of those 8,000 articles it would require 2,000,500,000,000 of rates, which if printed in ordinary style would make 666,666 volumes the size of Webster's Unabridged Dictionary, which would fill to the roof more than 100 of the largest sized box cars. To post two sets in each station house, in the manner required by the law, would require a library building attached to each station larger than the Congressional Library building at Washington.

Now then, to accomplish this enormous problem we have got to resort to method and system. Well, of course, we don't publish a rate for every article that is shipped. We have a classification by which we group these articles that are shipped, and those articles that we think ought to bear first-class we mark first-class, and so on.

The roads in the West some fifty years ago grouped all these articles into ten classes, Nos. 1, 2, 3, 4, and 5, and letters A, B, C, D and E. Well now, that tremendously simplified it. It reduced the number of volumes, if I think right, and I figured it out somewhere, to about 800. Well, that classification did very well in the moderate commerce and the comparatively few articles that were shipped by rail fifty years ago when that was made, but in more modern commerce, the extension of trade and different articles coming in, they had to have a finer classification than that, so, instead of changing the classification, we got to issuing commodity tariffs. That is, we would issue separate tariffs for brick, and a separate tariff for hay, and a separate tariff for commodities, until we have got up to 800 of these, and that gets us back to a library of 64,800 books the size of Webster's Unabridged Dictionary. Well, that would not be any use, you know. No man could look through 64,800 volumes to find his rate. We have to get more system than that.

Well now, I have been studying this thing. We had a meeting down at Washington before the Interstate Commerce Commission, and a lot of fifty-thousand-dollar salary fellows there that represented big railroads. They said, "We would like to do this if we could;" and I, like an idiot or enthusiast, as I am, I said, "I believe it can be done; I believe it is possible to systematize these things and adopt methods by which we can publish practically all of the rates—all of the joint rates between different railroads, which carries very much the largest volume of business—I think we can get that into a book—one book, the size of Webster's Unabridged Dictionary." Well, everybody said it was impossible. It was a sort of a random shot. I hadn't made much calculation about it, but said I thought I could. Well, the Commission says: "If you think you can do it, we wish you would do it, and show us how it can be done." So I have been at work on that problem for several months, and

I am going down next week to report to the Interstate Commerce Commission the way I think it can be done.

In studying this problem I picked up a tariff of rates called the Trans-Continental Tariff—that is, the rates on the classified articles from the Atlantic seaboard to the Pacific seaboard, not including any intermediate rates—and it was a book as thick as those two (indicating), and larger, and there were 800 different commodities, each one having rates opposite it. Well, I sat one day looking at that. That was a sort of a "stumper," you know. Eight hundred different commodities filled 250 quarto pages of figures, and I commenced to look at the rates, and I found they were continually repeating themselves, and I called in my clerk, and I says: "Here; here's a dollar rate, here's a 65-cent rate, here's a so-much rate. Find out how many there are in this—find out how many different rates there are, really different rates." And to my astonishment, in that full schedule of 800 and odd rates there were only thirty different rates. The others were all repetitions. All you had to do was to group these commodities with reference to the rates that they bore, and that is the classification, and instead of having to publish 230 pages of figures, why, you could publish all the rates on the size of one page. Thirty rates. Thirty different rates. That is all there were.

Well now, I haven't got time, and I don't suppose it would interest you—it would be rather abstruse to go through the whole thing of this—but that set me to thinking, and I said to myself, "I wonder what the highest rate on the highest class is," and I went to hunting. I thought I knew about where the highest line of rates were, and I found that the highest rate was about four dollars. Well, I said, the lowest rate on first class is about 12 cents. Now, the difference between 400 cents and 12 cents is 388 cents, and if we don't make the rates more than one cent apart, why there can be only 480 rates—actual rates—in the whole United States on first-class goods. Well, to make that rate between all stations, unless you can classify and arrange the stations somewhat or some way, you have got to make—how many millions was it?—two or three hundred million rates. But if you can reduce the actual rates to 480, why, you have got a large step. Well, then I said, "Here's this tariff with 800 commodities; there are only thirty classifications. Well now, you keep these a cent apart at a given point, and add them on to the ten classes we have now, it will make forty classes. Well then, the problem is, there would be 480 rates and forty classes; that would be forty times 480. That would be the number of rates.

Now then, I says, here is first-class $4.00; second is something less; third, fourth and fifth, and so on. If that ratio—the ratio or relation between the classes and the rates—is maintained at all stations and everywhere—that is right; that is the law—if the rate on first-class is twice the rate on second class at Marshalltown, it ought to be twice the rate on second-class at Des Moines, and at all other stations.

Now, if we can maintain these ratios—that relation of rates—why, we can print a universal schedule of rates—a table of rates like an interest table. Why, I can print this on ten pages, and if I number each one of these rates, considering them as one rate— I don't know as I make myself plain—put down here first-class, so much, second, third, fourth-class, right along in a string; those are the rates on those different classes; then put a number in front here, and you quote that rate by number, and all you have to do is to see in your classification what class it belongs to, and there you have your rate. Well, it just seemed to me that you could publish a universal rate sheet. There are all the rates there. But, if the rate on second-class is going to be made 50 per cent of the first-class at Marshalltown, and 60 per cent at Waterloo, and 45 per cent at Des Moines, why, there would be so many combinations that you have broken up the system, and you have to get back to your 666,000 volumes to publish it in; but these two methods of classifiction, which are as old as railroads, have to be enlarged and made uniform, and then the adopting of a relation between the classes at a fixed relation between the classes, why, you have it down to a point where you can publish a tariff between all towns with only 300 and odd million rates; but the places could be consolidated and systematized in the same way, so that I am satisfied, without going further into it—I am satisfied I shall be able to demonstrate to the Commission, and to every fair-minded man, that the joint rates can be made upon that principle between all the railroads in the United States in a book about the size of Webster's Unabridged Dictionary. If it is arranged with the names alphabetically, why, any man of ordinary understanding can tell what the rate is. It goes without saying, gentlemen, that this method or system will be unpopular with the old-fashioned freight agent who has been in the habit of making one rate for one man and another rate for another man. He will see that it will make it impossible to encourage "infant industries." They are all great believers in the republican principle of encouraging infant industries—suckling them at their breast, you know—such infant industries as the Standard Oil Company and United States Steel Company and the International Harvester Company. Why, I honestly believe that nine-tenths of the freight agents of the country, who work for $300 or $400 a month, believe if they could not give these infant industries nurture from time to time that they would be wiped off of the face of the earth. I mean the infant industries would. If the rates were systematized the way I speak of, the only practicable way to reduce rates would be to change the classification. Now, what would that do? If they wanted to reduce a rate at the Missouri river, and they did it by changing the classification, it would reduce that rate at Des Moines, and at every other town just the same. Now, is that right, or is it wrong? Is it right that when the railroad company reduces the rate at one place it shall reduce the rate at all places to the same extent and in the same proportion? Now, that, I think, would be true competition. I don't think that giving one man a reduced rate and advantage over another man is true competition. That is discrimination.

Well, gentlemen, I am afraid this is rather an abstruse question, and I don't care to speak longer on the subject. As I say, I am satisfied that the members of the present Interstate Commerce Commission are convinced that the rates—the schedules—should be made in this simplified form. It would add stability to the rates, so that a man could calculate his business a few months in advance and not have to figure whether a rate would be there then or not. It would do a great deal to relieve the car stringency that occurs every fall, because men could get out their stuff in advance. There are people that will freeze to death this winter because the railroads cannot get them coal; and why can't the railroads get them coal? Because they don't order their coal until the temperature is 40 degrees below zero, and it takes longer for the coal to get there than it does for them to freeze to death. That is all there is about it. Now, why don't they order their coal earlier? Because for years the rate on coal from the Lakes through this country and to the Missouri river during the summer have been so high that no merchant, no coal dealer, would ship. Because why? He knew that when the time came and the stress came, the railroads would reduce the rates, and if he shipped in at a high price, why, he would be left.

Now, then, if we can get this system adopted, we will have the same rates in the spring that we have in the fall, and the same in the fall that we have in the winter, and get it in shape so that when the coal merchants know that, why, they will buy in the spring, when it is cheap. Take the anthracite coal—it advances 10 cents every month. Well, 10 cents a month on the cost of a ton of coal is 2 per cent a month. Well, there is not any coal merchant here, or at the Missouri river, but would like to earn 2 per cent on his money instead of keeping it in the bank until fall, if he knows that when fall comes the rate won't be cut down out from under him, so that his competitor will really get his stuff cheaper than he does.

THE CHAIRMAN: The joint session will now be dissolved.

PART IV

PROCEEDINGS

OF 1906

State Agriculture Convention

AND

Conclusion of State Farmers' Institute Meeting

Wednesday morning, December 12, 1906.

The State Agricultural Convention convened in the rooms of the Department of Agriculture at 9:30 o'clock A.M., with President W. W. Morrow in the chair.

The meeting was called to order and the President appointed the following committees:

Credentials—L. H. Pickard of Shelby county, M. L. Flinn of Woodbury county, and Frank Sheldon of Ringgold county.

Resolutions—C. W. Hoffman of Decatur county, E. A. Larson of Montgomery county, and S. B. Packard of Marshall county.

Vice-President Cameron was called to the chair and the President made the folowing address:

PRESIDENT'S ADDRESS.

HON. W. W. MORROW, AFTON, IA.

The statement has been made at each annual meeting for the past few years that the fair just closed was the most successful of any in its history: and while this was true in the past, it is especially true of the fair of 1906.

The report of the weather and crop service will show that Iowa has produced this year a total of 385,000,000 bushels of corn, valued at $128,000,000; also 142,000,000 bushels of oats, valued at $38,000,000. The entire product of the farms will show that this has been the most prosperous year in the history of the State, and I am pleased to say that the great Iowa State Fair has kept pace with the agricultural interests which it represents. The farmers of Iowa are especially interested in the success of this fair, and believe that it ranks with the other State educational institutions and should receive liberal financial support for the construction of permanent buildings on the grounds.

The Iowa State Fair is yet in its infancy and more land is needed for the growth of same. The land lying between the south entrance and the Rock Island depot should be secured and the legislature asked to make an appropriation to build a hog pavilion suitable to care for the swine exhibit, which is the largest exhibit of its kind in the world and which represents one of the greatest interests to be found in the State. If the above suggestions should be carried out, the space now occupied by the swine pens could be used for the horse exhibit and would avoid any congestion which now exists in that part of the grounds. The twenty-acre tract north of the race track, on which we have an option, should be purchased, and the race track moved farther north. This would give more space for the machinery and other exhibits, which is now, and will be in the future, much needed. This will require the building of a new steel amphitheater of sufficient size to accommodate the people and which for years has been needed, and if built, would not only secure the safety of the people that patronize the same, but would be a source of revenue to the society which we do not have under the present conditions.

Many other improvements are needed, a part of which can be provided for by the society, but all permanent buildings, such as a swine pavilion, a steel amphitheater, a manufacturers' building, and other buildings, should be provided for by the General Assembly. Other improvements are under consideration, such as a water supply from the city, a new system of lighting, improvements on the streets, etc., all of which the future Board are amply able to provide for without any recommendations on my part.

The total receipts for the year 1906 were $110,229.85; expenses amounted to $72,459.39, and the net profit of the same amounted to $37,470.46, detailed statement of which will be found in the Secretary's report.

Today my connection with the State Board of Agriculture as an officer will cease. The years that I have been associated with the members of this Board have been the most pleasant years of my life, and for the many acts of kindness which I have received at their hands and for the support which I have received from the delegates to the annual meetings, many of whom are delegates here today, I wish to extend my heartfelt thanks.

President Morrow again took the chair.

Following the reports of Secretary and Treasurer (Part 1), Mr. J. R. Sage, Director of the Iowa Weather and Crop Service, gave a review of the weather and crops for the season of 1906, which report will be found published in Part Two of this volume.

THE PRESIDENT: We will now listen to a paper by Mr. E. A. Larson of Montgomery county.

THE UP-TO-DATE COUNTY FAIR, AND HOW IT CAN BE MADE USEFUL TO THE COMMUNITY.

E. A. LARSON, SECRETARY MONTGOMERY COUNTY FAIR ASSOCIATION, RED OAK, IA.

In order that the county fair may be maintained, and that it may best serve the purpose for which it is held, and the community may be interested sufficiently to insure its success, it should be conducted, not by a society composed of a few enterprising and public-spirited men, but by an agricultural society of which every taxpayer and every citizen would be a stockholder. The county should own the grounds and conduct the fair. The interest of the community in the county fair would then be identical with our common interest in our great State Fair.

Laws should be enacted which would give to the board of supervisors of the county power to levy a tax upon all the taxable property in the county, or to appropriate out of the county funds an amount of money with which to purchase grounds, erect the necessary buildings and otherwise support the fair.

The affairs and the management of the fair should be in the hands of a board of directors made up of representative men, men of energy, ability and judgment. The directors should be appointed by the supervisors of the county, and the appointment should be made irrespective of any political affiliations, and their duties should be prescribed by statute.

Something must be done to revolutionize the county fair business if the county fair is to be maintained or conducted with such success that its usefulness and its influence will be manifest in the community. The interest in the success of these annual county fairs in many counties of the State has almost entirely disappeared, and may never be sufficiently aroused unless something is done along the line which has been mentioned whereby the interest of a few will be the interest of all.

There are many reasons why the interest of a community in the county fair has, so to speak, disappeared. Perhaps the fair is not held at the most advantageous time of the year; perhaps the variety of exhibits is not sufficient to all purposes and intents; perhaps the premiums offered are not interesting; perhaps more attention is given towards securing entries for the speed ring than in securing exhibits of agricultural products, horses, cattle, hogs or display of farm machinery, etc., and for various other reasons.

That the county fair may be of value to its patrons, and that it may accomplish results that will be beneficial to the community, the exhibits in every department must be complete, and in order to encourage exhibitors large and attractive premiums should be offered, sufficient to enthuse competition and justly compensate for the preparation.

Premiums that are offered to exhibitors by the ordinary agricultural societies are comparatively small, at least too small to encourage many exhibitors. This is undoubtedly one of the many reasons why the interest of the community has slackened in the success of the fair. In localities where the success of the fair is of little concern it is a difficult matter for the management, in preparing the premium list, to offer large and attractive premiums because of their inability to estimate what the income of the society will be and what money there will be on hand with which to pay premiums and other expenses that are necessary.

It cannot be expected that a few enterprising and public-spirited men in the community, who have invested their money and devoted their energies towards the upbuilding of an institution like the county fair purely for the benefit of the public, and who under the most favorable conditions are unable to realize any profit upon their investment, should be compelled, year after year, to offer larger premiums than they are, or that the income of the society will permit, in order that the fair may be maintained.

If the fair was one of the permanent institutions maintained by the county, through a tax or appropriation, if such was necessary, better and more attractive premiums could be offered, which no doubt would stimulate the interest and energy of the people to such an extent that exhibitors would be more numerous, more exhibits would be displayed, and finall the interests, energy and enterprise would be concentrated to such an extent that there would be but one object in view, and that to broaden its scope of usefulness. And with but one effort in view there would also be a tendency to eliminate much of exclusiveness and selfishness, and with this out of the way the fair could be raised to a high level as an institution of learning and its usefulness would be well observed.

By the county fair the progress of the community is measured. It records the advancement. It stimulates the energy, enterprise and intellect of the people; it goes into the home; it broadens and brightens the daily life of the people; it opens more storehouses of information. Every county fair, great or small, has helped to some onward step. Comparison of ideas is beneficial and educational and as such instructs the brain and hand of man. Friendly rivalry follows, which is the spur to industrial improvement, the inspiration to high endeavor in all departments of activity. It exacts a study of the wants and comforts of the people, and recognizes the efficacy of high quality to win their favor. The county fair has done its work thoroughly in presenting in its exhibits evidence of the highest endeavor and illustration of the progress of the community.

In our day there has been much change, much progress. Agricultural societies and similar organizations, such as the Farmers' Institute, etc., and all agencies which promote intelligent co-operation and give opportunity for social and intellectual intercourse, have played a large part in raising the level of life and work among the people. For the farmer and stock grower the national and state governments through the departments of agriculture have accomplished striking results, by scientific study of all the matters connected with farm life, by experimental stations, by the use of trained agents, by the application of everything which in theory has been demonstrated to be efficient. In these ways, and many others, great good has been accomplished in raising the standard of productiveness in farm work throughout the country.

We live in an era when the best results can only be achieved if to individual self-respect we add the mutual self-help which comes by combination, both of the citizen in individual capacity and the citizen working through the State.

If the county fair could be conducted as a public institution, instead of as a semi-public affair, as it now is, and with it would be consolidated under the same management the farmers' institute, the short course in grain and stock judging, the agricultural experiment work and the Chautauqua, the county would have an institution by and through which it could and would receive the benefits and results of these kindred institutions as well as the benefits and the results of the work of the national and State departments of agriculture. The agricultural experiment work that is now done by the county, with the assistance of the trained agents of the State Agricultural College, could be done on the fair grounds, and the results of experimental work could be part of the agricultural exhibits at the fair. The corn school short course, which has proven so beneficial to those who are constantly in search for information which tends to raise the standard of productiveness of farm work, should be conducted under the auspices of the county, and should be one of the branches of the county fair.

Let us unite our efforts and secure a public institution of this kind in every county in the State.

See discussion on this subject, page 127.

THE PRESIDENT: Our Governor, Honorable A. B. Cummins, will now address us.

ADDRESS.

GOV. A. B. CUMMINS.

Mr. President, Gentlemen of the State Farmers' Institute, and Convention: In some way I had received the impression that my performance was to occur this afternoon, and I had rather expected to spend the noon hour in pulling myself together and in determining just what should be the subject of the discussion which I intended to put forth. However, although I come entirely unprepared so far as phraseology is concerned, I know very well what I desire to say and perhaps I can make myself understood.

I congratulate you all very heartily, very sincerely, upon the general prosperity that has attended, and now attends, the interests in which you are most vitally concerned. I believe it to be true that there never was a time in our commonwealth when our farmers were so universally prosperous, so universally happy and contented as they are at the present moment, and therefore you are peculiarly fitted to consider the things which concern your welfare. I have observed that a man in adversity, or in discontent, or in unhappiness, can never propose changes and remedies that are wise; he necessarily is affected by his condition. I congratulate you upon the great success that has heretofore attended your efforts. I refer now especially to your State Fair. I am in the habit of thinking that everything that Iowa has is a little better than anything than anybody else has. I am conscious, however, that my judgment sometimes may be perverted by the pride I feel in the magnificent development of our commonwealth. But, I think I speak not only the opinion of our own people, but I think I speak the accepted judgment of the whole western country when I say that the State Fair of our commonwealth stands conspicuously above the State fairs of any other commonwealth in the Union. I ought to congratulate you, and I do congratulate you, upon the high fidelity, the wonderful intelligence, manifested by the men to whom you have committed this annual exhibition of the fruits and vintage of agriculture. I look upon the State Fair solely as an educational influence. It seems to me that we are rearing in this State a wonderful educational structure. I do not know whether to begin at the top of it or at the bottom of it to describe it. I look upon it as though the Agricultural College stands at the apex of this edifice. Then comes our State Fair, our agricultural societies, horticultural societies, our State and County Farmers' Institutes; and altogether they form one of the most admirable and effective systems of instruction in agricultural science than can be found in any State in the Union, or in any country in the world. I recognize that this fair and these institutes have other objects than purely instruction in the science of agriculture They are made pleasant and beautiful and entertaining, but, after all, the highest and noblest purpose of all is to look up, to ennoble the basis of humanity, the tilling of the soil.

We have fortunately in this State a high percentage of such as no other State has, and again I am drifting away into expressions of pride. But I believe it to be true that while all other states have some good land—and I am glad of it—there is no other State that has proportionately the same quantity of good, splendid, fertile soil that we find in the State of Iowa. I am told that in our commonwealth 97½ per cent of the area of the State is capable of successful and profitable use in agriculture; and there is no other State in the Union that approaches this percentage by 10 or 15 per cent. Now that you have committed to you one of the greatest agencies that was ever reposed in human hands, and the splendor, the magnificence of the thing committed to you, measures your responsibility in dealing with it.

There are two things, as it seems to me, that all agriculturists and all followers of agriculture, horticulture and allied occupations ought to remember. First, it is our business—and I use the word our—for while I am not a farmer, I, together with all others who live in this State, are just as much interested in farming as you are, because it is the coming interest of the State of Iowa. It is the thing that most of all makes Iowa conspicuous and notable throughout the Union, and unless we do well with the natural gifts that God has given us nothing will come of it. Therefore, I say our. There are two things, as it seems to me, that we ought to very carefully consider. First, it is our duty to make the acres of Iowa soil produce all that they are capable of producing. Second, we must transmit to our posterity these acres of Iowa soil just as fertile and as productive as we received them from those who went before us. These two things I think constitute the natural maxim in the interests of agriculture in this State.

That leads me now to the next suggestion—the wonderful, the magnificent, and I sometimes think the mysterious, awakening in agriculture, the science of agriculture, that we have witnessed within the past few years. I believe you may read the high growth of human race. You may become familiar with every step that humanity has taken in order to improve itself and acquire further information, and you will find nothing parallel with the growth of the people of this State in the sentiment in regard to the science of agriculture. I have been amazed as I have gone about this State from institute to institute to observe the deep and pervading interest which the people have displayed in probing into the mysteries of nature; the interest they have manifested in acquiring all the knowledge of the earth. This awakening is most gratifying, must be gratifying to you and to everybody. For in the first place to pass to the material benefits which have come from it, it makes better men and better women of you; it lifts you up and you see beauties that you never saw before. You find an interest in merely turning over the ground that you never found before. The veil which nature has let down before your eyes in regard to many of its operations has been lifted and you see wonderful operations, the effect of which you knew before but the progress of which you never dreamed of until the book of the science of agriculture was opened before your eyes. And, therefore, the very first and probably the very highest benefit which we have received from this revolution in our conception in regard to agriculture which has really occurred in the last ten years, is to give us all a higher and better conception of our relations, not only to the rules of the universe but to our fellow men. But I shall not dwell upon that particularly, but pass to the material benefits in this intense study, this intense absorption which you find the men of agriculture and horticulture in this State growing out of the new and awakened interest in the science of agriculture. We all desire to make our calling successful. While I hope that it is not the principal motive of any life to make money, it is one of the things which we most always have in view, and therefore if this increased opportunity, this increased interest in the science of agriculture related only to the moral and spiritual development you would probably find somebody vastly better qualified than I to speak of that phase of it. I am now going to speak of its material advantages. I do not pretend to know of my own knowledge the things I am going to relate; I am simply taking them from men who are qualified to speak. I try to learn something every day, and when I get hold of a man who knows anything about farming, if he has the time to give me the information, I squeeze him just as dry as I can. I believe it to be true from this information that the present year is conclusive evidence of the value of the scientific knowledge of agriculture, and I am told that of the four hundred million bushels of corn—I speak in round numbers—which the farmers of Iowa have produced this year, that you owe fifty million of these bushels, at the most conservative estimate, to the knowledge that you have gained in the study of the science of agriculture within the past few years. That is to say, if we had not known anything more about raising corn than we did twenty years ago and exactly the same conditions had prevailed in this State as have prevailed this year, instead of raising four hundred million bushels of corn we would not have raised more than three hundred and fifty million bushels on the same acres. I recognize, of course, that there are a great many elements entering into this gradual and insensible advantage, but I have given you what I believe to be a conservative estimate; therefore, in corn alone you have fifty million bushels more than you would have had. It happens to be worth this year thirty-three cents per bushel. I am not now speaking of the additional profit you will acquire if you feed it to hogs. I am assuming now that you sell it, and the advantage therefore that the people of Iowa have this year in corn alone returns them an investment of not less than fifteen million dollars. Fifteen million dollars is the sum that I have in mind for corn alone. If you will add to this the additional advantage of your forage crops, and of your cattle, your hogs, and everything that you have produced derived solely from this general interest that the farmers have taken in this science of agriculture, I have no doubt that when I name twenty-five million dollars as your profit upon that investment I will be well within the limits. Twenty-five million dollars in a single year. That is more, a good deal more, than the State of Iowa has spent on its educational institutions for both the support and the construction of all our educational institutions. That is, I mean our three educational institutions, the College at Ames, the University at Iowa City and the Normal School at Cedar Falls. You have taken in in one year more than you have ever spent for their support, including all that you have ever expended in the construction of the splendid buildings that are now to be found at these various institutions. Twenty-five million dollars will pay all the expenses of the State of Iowa for a single year. That is to say, I am not speaking of the State government, but the county government, the city government and the township government. These expenses will be a little less than twenty-five million dollars. It means that you have earned this year enough to maintain all the public schools of the State of Iowa, including the three institutions conducted by the State devoted to higher learning. It means that you have won enough to pay for two years all the expenses connected with the maintenance of our public school system.

Now, I believe, if I have correctly stated the facts, you must agree with me that you have made a wonderfully good investment. No investment in the State has ever returned so high and so rich a reward as that investment which originated and which carries forward this work of education. And now I am coming to my point, because I have this in my heart to say.

I have looked upon the work which has been going on in this State with intense interest. I believe that in it lies the leadership of Iowa in the Union, and therefore I am going to suggest it to you for your consideration. Not simply to lay aside, not simply as a valueless thing, but because I want you to think upon it, and act upon it. I believe that a large part of this credit for this awakening and this interest in agriculture, the lessons which you have seen in the last few years, the close interest you have seen everywhere throughout the state. I believe the real credit which has been given for this should be given to the Agricultural College at Ames. We have there now, and have had, a band of as faithful and devoted public servants as I have ever known, and without stint so far as their strength was concerned and without measure so far as their enthusiasm is concerned. They have gone about this commonwealth preaching the gospel of corn. There are very many men in this State who cannot go to Ames; they are too old to enroll as students at Ames. There are a great many men and women in this State who have passed from this period of preparation, but they would like the opportunity to study the fundamental principles of the science of agriculture. There are a good many boys in this State who, however ambitious they may be, however deserving they may be, cannot go, cannot leave home to take the course which is prescribed for students at the agricultural colleges, either at Ames or anywhere else. We are all bound by conditions and sometimes we cannot get away from them, and the number of men and women who can attend the agricultural school at Ames is now and always must be very small; and I believe the time has come in this State when we ought to extend the opportunity to our men and women to study agriculture. I would like to see some plan devised by which gray headed men can, if they have an hour on a rainy day, or after supper at night, whenever they can get it, have an opportunity to sit down with their wives and their children around them, and study the thing which is to make Iowa great and prosperous, if we are to be great and prosperous. Now I come to another step. I do not know whether all of you are aware of it or not, but there has been in this country the last few years a system of education devised which is new in our age. It began in the Chautauqua. Years ago some good men and women conceived the plan of instituting a Chautauqua. Now I don't mean these Chautauquas which we see generally throughout the State, where any man, and some who can't, get up and talk for two hundred dollars per day. I mean the Chautauqua which planned a system of instruction for those who could not go to school. Out of that Chautauqua experiment there has been organized in this country a system of correspondence schools that are simply wonderful. They do not make the highest scholars; there is no opportunity for complete, and therefore no thorough education, but I have had an opportunity to investigate it myself. There is one school down at Scranton, Pennsylvania, that has ten thousand pupils in the State of Iowa. Ten thousand of our boys and girls and men and women are now taking instruction in the various branches of learning from the Scranton Correspondence School. There is another at Cedar Rapids, Iowa, and there is another at Sioux City, and they are scattered all over the land. Now these, while I have no doubt there is some philanthropy in the hearts of the men who are carrying them on, are money making enterprises. But in talking this over with a good many people who are interested in educational work going on in this State, this thought has risen, could we not add to the Agricultural College at Ames, not a distinct department, because the work in a small degree is now being done, but could we not add to the Agricultural College a school of correspondence instruction, where the man who cannot go to it, even for the short course, can enter into communication with the teachers at Ames through the medium of the mail and secure the fundamental benefits of scientific training in agriculture with the very minimum of expense. I believe that if we had such a thing it would not be more than six months until we had twenty-five thousand men and women in this State passing through a course of agriculture. It would cost very little. Now I think myself that a part of the expense should be borne by the pupils; I think that is right. But I think the State should equip our institution there to take care of its end of it. Now I do not want you to think for a moment that this is an appeal made by the Agricultural College. It would come from a very worthy source if it did; but this suggestion comes from me. I am no more interested in the Agricultural College at Ames than in the University at Iowa City or the Normal School at Cedar Falls. I would have each institution carry forward the work that is assigned to it with success and honor; and the education of the State so far as agriculture is concerned is committed to the college at Ames. I think we could double its usefulness if it were so arranged that every farmer, every farmer's boy and every farmer's girl in this State could take up a course running over two or three years. I know nothing of the details of such a course of instruction, and when their progress was satisfactory to those who examined their papers from time to time and there was evidence that they had faithfully acquired the information that was necessary, they ought to have a diploma, they ought to have a certificate that they had passed through this course. I believe it would do more than any other one thing to continue this splendid awakening on the part of this State in the study of agriculture. I see no limits to this enterprise. Last night I was talking with a member of the Horticultural Society, our friend Asa Turner, who lives in this county, and, notwithstanding his years, has been a student at Ames; and I heard him telling of the additional interest which his study had given him in life, of additional willingness to remain on the farm. And there is another thing—if there is one tendency I would like to see arrested in this State, it is the tendency to leave the farm, either in the young men or the old men. I do not believe the old men should leave the farm and go to town; they are not as much use to their fellow men as if they stayed on the farm. Anything that you do of the kind that I have suggested to you adds new interest to life, it fastens men more firmly to their farm, to their homes, and I would like this convention or this society to consider this subject. It would not cost much. I know that I have the reputation of being a little extravagant, but I never advised the State of Iowa to expend a dollar that I did not think would be returned to it tenfold over, and the recommendation which I have made for the maintenance of this institution would seem to me has been justified by the process of time, and the small yearly appropriation that would be necessary to establish a school such as I have outlined would come back to you, I think, every year, not interest only, but in principal as well. We are a part of a great moving, rushing throng. This is an age of restlessness, and I am glad it is so. It is an age of improvement and growth, and the patriotic men and women of Iowa are always in the very forefront of the procession of civilization. I thank you.

MR. PACKARD: I move that this convention tender Governor Cummins its thanks for his very interesting address, and that this convention may vote upon the recommendation of the Governor for some plan upon the question of a correspondence school at Ames, in case it meets with the approval of the convention the committee on resolutions, when appointed, may think out some scheme in this direction and make some recommendation in their resolution. I suggest that the first part of the motion be made this; that the thanks of the convention be tendered Governor Cummins. Motion seconded and carried unanimously. For the second part; that the convention approves, for the time being at least, of the recommendation made in the Governor's address relating to a school of correspondence at Ames. Seconded and carried.

Mr. Packard moved that the subject of taxation for the purpose of establishing county fairs be discussed.

MR. LARSON: The idea I had in view when I thought of this was that I believed that there are too many of these organizations in every county which are closely allied and closely connected. Here is the farmers' institute; here is the short course school; here is the experiment work; and here is the fair; and I might include the Chautauqua. You have five or six organizations in a county, and in order that you might draw the interest of all the people in some or most of them, you have got to get together. Now I have thought of this, as long as these institutions are carrying out the purpose for which they are held and are of interest, and the county could be assured of the interest that they are intended for, then the county as a government ought to control the grounds and conduct the fair, and in connection with the fair, conduct the experimental school, etc. When you put all the branches there under one head you have them in such shape that each branch then answers the purpose for which they are intended.

MR. PACKARD: I agree with that part of the proposition of the county standing the expense of the fair and then the county voting a tax for the purpose of erecting buildings, etc. I agree with this, that you may expect the gate receipts and receipts from all sources just about sufficient to pay the expenses of the fair and give liberal premiums for exhibits. When you go beyond that and expect from your gates to tax yourselves to buy the grounds, build buildings, etc., you cannot make two ends meet.

If the receipts are large, as in our county they were, and we have twelve hundred dollars to fourteen hundred dollars now, that much money ought to be put into added premiums next year, and I would make the premiums bigger year after year because that will make the exhibits better year after year and of more interest. If you have to take your money for new buildings, etc, you cannot do this thing; you have to skimp yourself. Now as to the point of letting the county supervisors run the fair I cannot agree. I think the best results with the county fair will be to let that thing go as they are. If you attempt to run it in that form you will get more politics than under the present system But to allow the people of the county to tax themselves when the wish for the purpose of raising money to buy grounds and erect buildings, I am willing to let that stand. I make a motion that the convention instruct the committee on resolutions to bring in a resolution on the subject of allowing the county to tax themselves for the purchase of grounds and the erection of buildings. Seconded by Mr. McDonald.

MR. VAN HOUTEN: I have no objection to the resolution, but I can hardly see that this resolution would have any force except in the way of bringing it before the people for discussion. The members of legislature are now elected and will soon meet in regular session. No instructions from this body would have any weight with them as compared with the sentiment of their own county. And it looks to me as this resolution conveys no force, no effect and no influence except to bring the matter before the people to have an expression in the county. I assure you for my own part, and others would feel the same way, that it would have no influence whatever in getting members to vote on this question.

MR. ST. JOHN: I heartily agree with the suggestions of the gentleman from Montgomery, and also with Governor Packard. I do believe you ought to keep it out of politics. Let me give you the condition in Howard county, to the east of my own county; their fair has become a thing of the past; and in Cerro Gordo county on the west, the county fair which once flourished has become a thing of the past. In Mitchell county we have struggled along to keep the fair together. When we asked the board of supervisors to aid us in rebuilding our burned buildings there went up a cry that there was a political lobby. The suggestion in that paper struck me as the thing to make the fair a success.

MR. SEAMAN: I have had some experience in county fairs, and I wish to briefly state that after due deliberation and some sad experience in these county organizations I have come to the conclusion that the days of the county fair in the State of Iowa are numbered; in fact, they are past. I do not believe if you will examine the history of any agricultural society in the State of Iowa, and examine it thoroughly, that you will be convinced they will be interested in maintaining in anything like a majority of the counties in the State of Iowa an agricultural society for any number of years. The State of Iowa has outgrown the county agricultural society; in other words, you cannot get enough people together in one county or adjacent counties to receive enough instruction from it to warrant the expense of maintaining it.

MR. MCTAVISH: I have had a little experience in conducting a county fair. I have listened to this discussion with much interest. I heartily agree with Governor Packard when he says that the funds obtained at the gates will not more than pay running expenses; I heartily agree with the gentleman who says that the State of Iowa has outgrown the county fair; but I disagree with the idea that the State of Iowa has outgrown a *county agricultural fair*. The county fairs of Iowa the last few years have degenerated so that in many cases it has not been safe for a man to take his family, his daughters, if you please, blooming into womanhood, load the family up in the surrey and go to the fair as in days gone by. Therefore the people of Iowa have outgrown what is commonly called the county fair, and what, in reality, is nothing but a low grade vaudeville. If the element that wants to see what is vaudeville, put on out-doors, what is called now the carnival, the element that wants to see that can see a far better vaudeville by going to central places for this where a better program is put on; a county fair cannot put on any attraction that will be worth the money at the gate. We have in my county, Linn county, three fairs. The one of which I have been director for several years is located at Central City. That fair degenerated; got into the hands of the attraction element; but it was reorganized on democratic principles, so that every one that bought a season ticket became a member of the fair association, and the property is consequently public property and everyone is interested. Had it not been so organized I presume it would have gone the way of other county fairs; but the people got together and took it upon themselves to make it an agricultural fair. They had their annual meeting and elected men that they knew would be for building up a clean fair. It has been three years since that step was taken. Prof. Kennedy judged our stock last year, and he made the statement that it was the best stock show that he had ever judged outside of the State Fair, or the World's Fair. Our admissions increased so that we have been able to increase our premiums. We have been able to draw stock from the surrounding counties. We have had stock in different departments that has been shown at the State Fair, and the people are interested in the fair and they load up their families and come in and support it because it is an agricultural fair. The attractions are a secondary element; the main feature is to educate the people along agriculture and stock improving lines.

MR. BURK: I have also had some experience in county fairs. I live in Marshall county, and the southwest part of Marshall county maintained a county fair for many years and always paid money in full. We are so situated that it is impossible to get receipts to exceed twelve thousand dollars. We let our race track go, and for two years had no fair, but to show you whether or not the people of the neighborhood are in favor of the county fair, we got together and reorganized. Last year we had a very successful fair; put on about three thousand two hundred dollars in improvements, and we feel encouraged at the exhibits we had, and we are all interested in the county fair and want to help it along. I believe county fairs can only be run by people who are interested in them. In soliciting stock for the county fair, a representative came to ask my assistance. I told him that on account of our local fair that it would not be worth the trouble to go around.

Motion of Governor Packard moved and carried.

On motion, the convention adjourned until 1:30 P.M.

WEDNESDAY AFTERNOON SESSION.

Convention convened at 2 o'clock P.M.

THE PRESIDENT: Mr. W. Z. Swallow of Waukee is scheduled on our program for a paper on the subject of "Does It Pay to Show Hogs at the Iowa State Fair," but as he is unable to be with us, Mr. G. H. Van Houten will read the paper to you as prepared by Mr. Swallow.

DOES IT PAY TO SHOW HOGS AT THE IOWA STATE FAIR?

W. Z. SWALLOW, WAUKEE, IA.

After an experience of many years as an exhibitor at the Iowa State Fair, as well as at many other State, district and county fairs, I am convinced that it does pay to show hogs at the Iowa State Fair. And I believe that the same arguments in favor of such showing are equally as strong in their application to the exhibition of other breeds of live stock.

Showing at the Iowa State Fair has paid me in many ways.

It has been a means by which I could from year to year compare the hogs of my own herd with those from other herds, and with those which I had every reason to believe were their best. This provided me with a high standard of excellence toward which I might work.

It paid me in another way because it brought the best breeding animals in the land right to me, so that I could examine and compare them without paying out large sums of money for railway fares and other expenses that would have to be incurred had I visited each of the herds represented at their homes. From these herds I generally selected such breeding animals as it seemed necessary for me to buy in order to keep my herd improving. It will readily be seen that at this point it paid me well in the amount of money saved.

It paid me, too, because it gave me a chance to form the acquaintance of the best breeders of swine in the United States, to learn their opinions, their methods of care and feeding, and to glean from them a great deal of information most useful in the business of raising and selling pure bred hogs. It also enabled me to keep informed as to the kind of hog demanded in different sections, the range of prices obtained, and many other things of interest as well as profit.

It paid me because it brought me in personal contact with thousands of farmers who were in search of male hogs to use in their pork-producing herds, and to establish a trade at private sale that has become a source of pride as well as of profit to me. This trade, during the forty years in which I have been an exhibitor, has in the aggregate taken more than a thousand hogs from my herd, and at prices that ranged from fifteen dollars up to one thousand dollars each. The Iowa State Fair has for many years been recognized as a great meeting place for buyers and sellers of pure bred hogs. More animals of that character can be seen in its pens during the week of the fair than at any two of the other greatest State fairs in our country.

The live stock show at the Iowa State Fair is really an educational feature, a means of setting before the farmer and stock raiser (and every farmer should be in some measure a stock raiser) the better forms of cattle, horses, hogs, sheep and poultry. By better forms we mean those which bring the highest prices in the markets. A hog, for instance, is better than another hog only when he brings a greater number of cents per pound, and when he makes a greater number of those pounds in the same length of time and on the same quantity of feed. There is no disputing the fact that the packing houses, by reason of the demands made upon them for the various forms of meat products, have called for a form or type of hog for which a higher price will be paid than for any other. When the call for this particular type of hog became a settled fact, the foremost breeders set about to make their hogs conform to it, to establish it as a breed characteristic. In this way they have been remarkably successful. The ideal pure bred hog of today fulfills the requirements of the very best markets, and there is no herd in the hands of a really intelligent breeder that does not contain a large percentage of animals which, if prepared for market, would bring the top price.

The efforts of breeders to perfect the type of their hogs so that it might conform to the standard established by the markets have been greatly aided through the competitions of the State fairs, and of the Iowa State Fair in particular. There they saw the best that their competitors were able to produce, and if it excelled their own they had the opportunity to make comparisons and learn at what points they might be lacking. But comparisons were but a small part of the advantages of the show. Certain animals, or certain strains of animals, showed a tendency to reproduce themselves with more certainty than others. The verdict of the show ring set the seal of approval on such hogs, and the wise breeder was he who kept well enough posted to know just what commingling of blood produced them. The best methods of growing and fitting, or bringing them to their highest state of perfection, were also disseminated through personal conversation at the State Fair in such a way as to be a benefit to every man who was bright enough to take advantage of his opportunities. I must say right here that live stock exhibitors are as a rule quite unselfish, being willing that the whole craft might have the benefit of any personal experience. For myself I confess that many bits of information that led to the betterment of my herd were learned at the lantern light discussions that took place in the old dormitory or at the pen side after the day's business was closed and none but the exhibitors remained.

It was the State Fair that made plain the need of a uniform setting forth of the proper proportions of an ideal hog. The scale of points as given by the score card perfected and used by the National Association of Expert Swine Judges was the outgrowth of this demand, and today the decisions of all competitive shows are based upon its provisions. Perhaps I should have said that they should be based upon them, as occasionally a fair is judged by a man whose knowledge is limited, and whose decisions do not represent the true type. But the general trend of the judging is in the right direction and may be depended upon as a guide. If I may be pardoned from the digression from my subject, I will say that the occasional inefficient or dishonest judge is a most aggravating fellow, whose power to harm the industry is a matter for serious consideration. Its misleading influence is far reaching and may be a means of damage and disappointment to innocent men who depend upon it. An instance of this came under my observation at the International Live Stock Exposition at Chicago last week. In one class a prize was awarded purely because of a personal opinion of a judge who absolutely ignored breed characteristics, and failed to give consideration to the objects of the show, or to comparisons that should have entered into the competition. As a result of that decision breeders who did not attend the show will be misled in the idea as to what is the popular and profitable type. In another class a decision was said to have been influenced by the breed preferences of an official high in the management of the exposition. I am glad to say that the Iowa State Fair has had very few instances of this kind, and I believe this is one of the reasons why it has so justly gained its enviable position as the greatest hog show on earth.

The excellent standard established in the leading breeding herds has only been reached after a long and troublesome siege at the State fairs, and was only possible because of the lessons the owners learned there.

I say to the young man who wishes to take up the work of swine breeding, go to the State Fair, take along a few pigs, keep your eyes and ears open, and do not hesitate to ask a question when there is a chance to learn something by doing so. Learn to see every point. Learn to compare hogs and to note what differences there are between them. Learn to look at an animal of your own breeding just as critically as at that of your competitor. There is no royal road to success, nor one that does not call for hard work and close observation seven days in the week. I am inclined to think that the young man who begins now, without experience, has a much more difficult work ahead of him than did the beginner of forty years ago. Of course he today has the advantage of being able to start with stock having quality as good as the breed affords. But he must be a most excellent judge of the individual merit of the animal, and after that the matter of proper strains and correct matings follow with a bearing on his future success that demands the exercise of more wisdom than he has probably ever thought of in connection with the business. He must know that success depends upon maintaining the type with which he starts, that is if his start has been rightly made. He must know that a failure to do this leads to a reversion to original types, lack of uniformity, and an ever increasing tendency away from the correct form. It is in fact the same in effect, with perhaps a less rapid result, as cross-breeding, and unfailingly harmful. At the State fairs there has been a gradual improvement in quality from the very first up to the present day. The quality of the stock on the farms has followed closely after, and as a direct result.

Showing at the Iowa State Fair has been a benefit to the entire pork producing industry, to farmers who have never attended the fair as well as those who have. It has shown them just what a good hog should look like. It has, through the ever increasing sale system, given him an opportunity to buy breeding animals at fair prices and has in many instances cultivated a pride in the matter of improvement in the farm stock. I have customers who have bought stock from me year after year, and continued so long that their herds show the very highest quality. Through this means animals are produced that make a rapid growth, mature quickly, and may be ready for the market at about eight months, and in such form as to bring the highest price. Since I began showing, the age for profitably marketing hogs has been more than cut in two.

Committee on Credentials reported as follows, and on motion of Mr. Van Houten the report was adopted and the committee continued, so that any question in regard to credentials could be taken up and not occupy the time of the convention. Motion seconded by Mr. T. W. Purcell, and carried.

REPORT OF COMMITTEE ON CREDENTIALS.

Gentlemen: The Committee on Credentials report the following persons duly qualified and entitled to seats in the Agricultural Convention for the State of Iowa, assembled December 12, 1906:

DELEGATES FROM COUNTY AND DISTRICT AGRICULTURAL SOCIETIES.

Adair County Agricultural Society—C. A. Gibbs, Greenfield.
Adams County Agricultural Society—George E. Bliss, Corning.
La Porte District Fair Association—B. L. Manwell, La Porte City.
Buchanan County Agricultural Society—A. K. Cole, Independence.
Beuna Vista County Agricultural Society—A. L. Denio, Alta.
Cass County Agricultural Society—E. F. Berg, Atlantic.
Massena District Fair Association—W. C. Williams, Atlantic.
Big Four District Fair Association—G. C. Hoyer, Nashua.
Elkader Fair and Track Association—John G. Hemphill, Elkader.

Davis County Agricultural Society—O. W. Wisdom, Bloomfield.

Floyd County Agricultural Society—John R. Waller, Rockford.

Franklin County Agricultural Society—Ralph H. Clock, Hampton.

Guthrie County Agricultural Society—A. H. Grissell, Guthrie Center.

Hardin County Agricultural Society—H. S. Martin, Eldora.

Harrison County Agricultural Society—C. H. Deur, Missouri Valley.

Humboldt County Agricultural Society—Levi Goodell, Humboldt.

Iowa County Agricultural Society—D. M. Rowland, Marengo.

Williamsburg Pavilion and Fair Association—Millard Harrington, Williamsburg.

Jackson County Agricultural Society—Ed Phillips, Maquoketa.

Jasper County Agricultural Society—C. O. McLain, Newton.

Jefferson County Agricultural Society—J. P. Manatrey, Fairfield.

Johnson County Agricultural Society—George A. Hitchcock, Iowa City.

What Cheer District Agricultural Society—U. S. Chasey, Nugent.

Kossuth County Agricultural Society—A. R. Corey, Wesley.

Columbus Junction District Fair Association—R. J. Reaney, Columbus Junction.

Lyon County Fair and Agricultural Association—W. G. Smith, Rock Rapids.

Madison County Agricultural Society—A. L. Foster, Winterset.

New Sharon District Agricultural Society—M. Bainbridge, New Sharon.

Lake Prairie District Agricultural Society—T. D. Tice, Pella.

Eden District Agricultural Society—H. G. Buck, Rhodes.

Marshall County Fair Association—J. B. Classen, Vienna.

Mitchell County Agricultural Society—R. Dorsey, Osage.

Monona County Fair Association—A. W. Burgess, Onawa.

Montgomery Country Fair Association—Henry Peterson, Red Oak.

Union District Agricultural Society—W. P. Nichols, West Liberty.

Wilton Fair Association—Harry Ayres, Wilton Junction.

O'Brien County Agricultural Society—R. C. Jordan, Sutherland.

Sheldon District Fair Association—S. M. Ladd, Sheldon.

Clarinda Fair Association—D. Stitt, Clarinda.

Big Four District Fair Association (Fonda)—John Forbes, Fonda.

Poweshiek County Agricultural Society—James Nowak, Malcom.

Poweshiek County Central Agricultural Society—I. S. Bailey, Grinnell.

Ringgold County Fair Association—F. E. Sheldon, Mount Ayr.

Sac County Agricultural Society—Philip Schaller, Sac City.

Shelby County Agricultural Society—Mrs. M. F. Pickard, Harlan.

Rock Valley District Fair Association—F. E. Watkins, Hawarden.

Story County Agricultural Society—H. B. Craddick, Nevada.

Tama County Fair Association—E. Mericle, Toledo.

Taylor County Agricultural Society—George H. Van Houten, Lenox.

Warren County Fair Association—Lee Talbott, Indianola.

Forest City Park and Fair Association—J. A. Peters, Forest City.

Buffalo Center District Fair and Driving Park Association—J. P. Boyd, Buffalo Center.

Winneshiek County Agricultural Society—Thomas Graham, Decorah.

Worth County Agricultural Society—Nels Thorson, Northwood.

Wright County Agricultural Society—S. W. Nelson, Clarion.

DELEGATES FROM COUNTIES IN WHICH NO FAIRS WERE REPORTED FOR THE YEAR 1906.

Bremer County—E. M. Reeves, Waverly.
Crawford County—H. C. Schroeder.
Dallas County—Oscar Gray.
Decatur County—C. W. Hoffman, Leon.
Dubuque County—H. C. Bumgartner, Dubuque.
Emmet County—J. C. Lovell, Estherville.
Greene County—A. P. Fuhrmeister.
Hamilton County—Carl Sparboe, Webster City.
Howard County—Walter C. Fox, Riceville.
Ida County—William C. Pritchard, Ida Grove.
Lucas County—C. J. Johnston, Chariton.
Polk County—Lew Burnett, Des Moines.
Scott County—B. F. Seaman, Davenport.
Wapello County—W. O. Bagley, Eldon.
Washington County—D. J. Palmer, Washington.
Woodbury County—M. L. Flinn, Sioux City.

DELEGATES FROM COUNTY FARMERS' INSTITUTES.

Adair County—A. C. Savage, Adair.
Black Hawk County—W. D. Stayer, Waterloo, Route No. 1.
Buchanan County—W. H. Warburton, Independence.
Buena Vista County—S. R. Haines, Storm Lake.
Calhoun County—Henry Parsons, Rockwell City.
Cedar County—J. S. Fawcett, Springdale.
Clay County—R. E. Brownell, Spencer, Route No. 1.
Dallas County—Ed. Vial, Adel.
Emmet County—H. W. Woods, Estherville.
Franklin County—T. W. Purcell, Hampton.
Guthrie County—S. J. Reed, Guthrie Center.
Hancock County—F. J. Oxley, Corwith.
Howard County—R. M. Thornson, Cresco.
Ida County—E. J. Preston, Battle Creek.
Keokuk County—C. L. Beal.
Kossuth County—J. B. Hofins, Algona.
Lyon County—A. A. Rogers.
Madison County—T. J. Hudson, Winterset.
Marion County—George Simpson, Knoxville.
Mitchell County—D. F. Sheehan, Osage.
Monona County—John Sundberg.
Muscatine County—C. W. Norton, Wilton Junction.
O'Brien County—H. O. Smith.
Polk County—R. H. Gormley, Bondurant.

Poweshiek County—J. R. Morris.
Sac County—Z. Fuller, Sac City.
Shelby County—L. H. Pickard, Harlan.
Story County—W. P. George, Ames.
Tama County—Welcome Mowry, Traer.
Union County—L. J. Day.
Van Buren County—W. A. Duckworth, Keosauqua.
Warren County—E. B. Igo, Indianola.
Winneshiek County—W. A. Van Vliet.
Winnebago County—Eugene Secor, Forest City.
Worth County—E. H. Miller, Northwood.
Wright County—A. C. Fuller, Dows.

DELEGATES FROM OTHER SOCIETIES AND ASSOCIATIONS.

Iowa State Horticultural Society—Wesley Greene, Des Moines.
Iowa Improved Stock Breeders' Association—E. M. Wentworth, State Center.
Iowa Swine Breeders' Association—W. D. McTavish, Coggon.

IOWA STATE BOARD OF AGRICULTURE.

EX-OFFICIO.

State Dairy and Food Commissioner—H. R. Wright, Des Moines.
State Veterinarian—Dr. P. O. Koto, Forest City.

OFFICERS.

President—W. W. Morrow, Afton.
Vice President—C. E. Cameron, Alta.
Secretary—J. C. Simpson, Des Moines.
Treasurer—G. D. Ellyson, Des Moines.

DISTRICT MEMBERS.

First District—R. S. Johnston, Columbus Junction.
Second District—C. W. Phillips, Maquoketa.
Third District—W. C. Brown, Clarion.
Fourth District—R. T. St. John, Riceville.
Fifth District—S. B. Packard, Marshalltown.
Sixth District—T. C. Legoe, What Cheer.
Seventh District—C. F. Curtiss, Ames.
Eighth District—John Ledgerwood, Leon.

Ninth District—M. McDonald, Bayard.
Tenth District—A. O. Olson, Forest City.
Eleventh District—H. L. Pike, Whiting.

L. H. Packard,
M. L. Flinn,
F. E. Sheldon,
Committee.

The President: The convention will now proceed to the election of the following officers of the State Board of Agriculture for the terms of one year each, and for district members for the terms of two years each:

President,
Vice-President,
Member from the Second District,
Member from the Fourth District,
Member from the Sixth District,
Member from the Eighth District,
Member from the Tenth District.

Mr. R. T. St. John, of Mitchell county, placed in nomination for President of the State Board of Agriculture, Mr. C. E. Cameron, of Buena Vista county; seconded by Mr. McDonald. Mr. Waller moved that the nomination be made unanimous and the Secretary be instructed to cast the vote of the convention for Mr. Cameron. Motion prevailed. The Secretary so cast the vote and Mr. C. E. Cameron was declared duly elected President of the State Board of Agriculture for the ensuing year.

Mr. E. M. Wentworth placed in nomination for Vice-President, Mr. W. C. Brown, of Wright county; seconded by Mr. St. John. Mr. Purcell moved that the Secretary be instructed to cast the entire vote of the convention for Mr. Brown as Vice-President. Motion prevailed. The Secretary so cast the vote and Mr. W. C. Brown was declared duly elected Vice-President of the State Board of Agriculture for the ensuing year.

Mr. E. A. Phillips, of Jackson county, placed in nomination for member of the State Board of Agriculture from the Second District, Mr. C. W. Phillips, of Jackson county, to succeed himself. Seconded by Mr. M. L. Flinn, of Woodbury county.

Mr. John A. Evans placed in nomination for member of the State Board of Agriculture from the Second District, Mr. W. H. Shipman, of Muscatine county. Seconded by Mr. Geo. A. Hitchcock.

Mr. T. W. Purcell, of Franklin county, moved that the nominations be closed and the convention proceed with the election. The President named as tellers Mr. J. S. Claussen, of Marshall county; Mr. H. S. Martin, of Hardin county, and Mr. T. W. Purcell, of Franklin county. The roll was called by the Secretary and the vote cast, and the tellers reported the result of the ballot as follows: Total number of votes cast, one hundred and twenty-one (121), of which Mr. Phillips received ninety-eight (98) and Mr. Shipman received twenty-three (23). Mr. C. W. Phillips having received the majority of the votes cast was declared by the President to be duly elected as member of the State Board of Agriculture from the Second District, for the term of two years.

Mr. R. Dorsey, of Mitchell county, placed in nomination for member of the Board from the Fourth District, Mr. R. T. St. John, of Mitchell county, to succeed himself. Mr. McDonald seconded the nomination and moved that if there were no other nominations the Secretary be instructed to cast the entire vote of the convention for Mr. St. John. Motion prevailed. The Secretary so cast the vote and Mr. St. John was declared duly elected member of the Board from the Fourth District for a term of two years.

Mr. Bray, of Poweshiek county, placed in nomination for member of the Board from the Sixth District, Mr. T. C. Legoe, of Keokuk county, to succeed himself. Mr. St. John seconded the motion and moved that the Secretary be instructed to cast the entire vote of the convention for Mr. Legoe. Motion prevailed. The Secretary so cast the vote and Mr. Legoe was declared duly elected member of the Board from the Sixth District for a term of two years.

Mr. Geo. H. Van Houten, of Taylor county, placed in nomination for member of the Board from the Eighth District, Mr. John Ledgerwood, of Decatur county, to succeed himself. Mr. Sheldon of Ringgold county seconded the nomination and moved that if there were no further nominations that the Secretary be instructed to cast the entire vote of the convention for Mr. Ledgerwood. The Secretary so cast the vote and Mr. Ledgerwood was declared duly elected member of the Board from the Eighth District for a term of two years.

Mr. Eugene Secor, of Winnebago county, placed in nomination for member of the Board from the Tenth District, Mr. O. A. Olson, of Winnebago county, to succeed himself, and moved that if there were no further nominations that the Secretary be instructed to cast the entire vote of the convention for Mr. Olson, which motion prevailed. The Secretary so cast the vote and Mr. Olson was declared duly elected member of the Board from the Tenth District for a term of two years.

Mr. Ralph Clock, of Franklin county, placed in nomination for member of the Board from the Third District, made vacant by the election of Mr. W. C. Brown to the Vice-Presidency, Mr. Elmer M. Reeves of Bremer county. Seconded by Mr. Van Houten. Mr. McDonald moved that the Secretary be instructed to cast the entire vote of the convention for Mr. Reeves. Motion prevailed. The Secretary so cast the vote and Mr. Reeves was declared duly elected member of the Board from the Third District to complete the unexpired term of Mr. Brown.

The Committee on Resolution reported as follows, and on motion of Mr. Fred McCulloch, of Poweshiek county, the report of the committe was adopted:

REPORT OF COMMITTEE ON RESOLUTIONS.

Your Committee on Resolutions most respectfully report the following:

We rejoice at the large attendance at this meeting and the manifest interest in agriculture and its allied interests. We are proud of the large exhibits of corn, as well as the fine and extensive exhibits of fruit; and the thanks of this convention are extended to the officers and directors of the State Board of Agriculture for this meeting, the best ever before held in Iowa.

We especially congratulate the officers and directors of the State Board of Agriculture for the successful manner in which they handled the State Fair.

We believe that the welfare and prosperity of the Iowa Department of Agriculture demands that every delegate to the annual meeting vote upon the election of each and every member of the State Board of Agriculture, therefore, be it resolved, that we are unalterably opposed to any change in the law in regard to the manner of electing its members.

That it is the sense of this meeting, and we hereby recommend that the legislature enact a law and make sufficient appropriation to enable the State Agricultural College at Ames to maintain a suitable school of correspondence so as to enable citizens of Iowa to take a two or three years' course of instruction at their homes, as recommended by your esteemed Governor, A. B. Cummins, in his address before this Convention.

WHEREAS, The State Board of Agriculture was active in securing the passage of the present pure food law, and, WHEREAS, The report of the committee appointed by the Board of Agriculture in 1905 shows that the mill stuffs, concentrated feeding stuffs and condimental stock foods now on the markets are largely adulterated and are not believed to contain either nutritive or medicinal properties comensurate with their cost,

Be It Resolved, That the State Board of Agriculture be instructed to urge legislation at the coming session of the General Assembly to regulate the sale of these foods, so that the State may not be made a dumping ground for adulterated, misbranded and worthless products.

We recommend to the ensuing session of the legislature, for their consideration, the passage of such laws as will authorize the Board of Supervisors of any county in the State to purchase, to become the property of the county, grounds and to erect suitable buildings to be used for holding the annual meeting of the county agricultural fair.

We feel grateful to the Meat Producers' Association and the Grain Dealers' Association for their efforts in behalf of the people of this State to push for an open market, domestic and foreign, for the farm products of Iowa.

Respectfully submitted,

C. W. HOFFMAN,
S. B. PACKARD,
E. A. LARSON,
Committee.

Mr. B. F. Seaman, of Scott county, presented the following resolution and moved that the same be adopted and that the Secretary engross the resolution and forward a copy to each of the Iowa Senators and Representatives in Congress.

Resolved, That we are in favor of increasing the postal facilities of the people of this country, and to this end we demand the passage of the bill now pending in Congress, known as House Resolution No. 4549.

Mr. H. R. Wright moved that the term "parcel post" be included in the resolution so that the meaning might be clear. Mr. C. W. Hoffman moved that the resolution be laid on the table. Mr. Seaman demanded a rising vote. The vote was so taken and the motion to lay on the table prevailed.

There being no further business, on motion, the convention adjourned sine die.

SYNOPSIS OF PROCEEDINGS

OF

State Board of Agriculture

AND

COMMITTEE MEETINGS

1906

EXECUTIVE COMMITTEE MEETING.

January 10, 11, 12, 1906.

Committee met on call of President with all members present.

On motion, duly made and carried, the Secretary was authorized as follows:

To expend a sum not to exceed $250.00 for .planting flowers, shrubs and trees, and to do such landscaping as would come within the amount appropriated, on the State Fair Grounds.

To have erected a seven-foot wire fence on Grounds as follows: From northeast corner of grounds east to the point even with the east line of Machinery building, and from the corner of the old Dairy building east 625 feet: also a woven wire fence around pasture lot south and east of barn.

To make proposition to Signor A. Liberati of $400 per day for six days of the State Fair of 1906, for his band of forty-five pieces.

To issue warrants covering pay-rolls of the Superintendent of Grounds when properly presented and O. K'd. by Jas. H. Deemer.

To issue warrants in payment of freight and other bills, requiring immediate attention.

To purchase such hay, straw and other feed, as necessary for the Forage Department.

EXECUTIVE COMMITTEE MEETING.

January 23, 24, 25, 1906.

Committee met on call of President with all members present; also, Board member, S. B. Packard, of the Fifth District.

The Secretary was authorized in the following matters:

To call for plans, specifications and prices for exhibit display cases for Exposition building.

To notify parties owning frame structures on the north side of Grand Avenue, east from street running north from point opposite W. C. T. U. building, that they would probably be requested to remove same before the first of June, and to be prepared to do so.

To execute contract with Signor A. Liberati for engagement of his band of not less than forty-five pieces, for six days of the State Fair of 1906, at full compensation of $2,400.00.

To have all cinders procurable within a reasonable distance of the Fair Grounds, hauled for improvement of streets and sidewalks.

EXECUTIVE COMMITTEE MEETING.

February 21, 22, 23, 1906.

Committee met on call of President with all members present.

The matter of vaudeville attractions for the State Fair of 1906 was taken up and considered, and contract entered into with the Barnes' Western Theatrical Exchange of Chicago, for supplying acts as selected.

The Secretary was instructed to make an effort to secure options on seventy-eight lots in Redhead Addition, lying between the south line of Fair Grounds and Rock Island Railway switch.
ing proposition to purchase ten to twenty acres of the land comprising notheast corner of Fair Grounds at price of $150 per acre.

The Superintendent of Grounds was instructed to have a King road drag made for use on Fair Grounds.

EXECUTIVE COMMITTEE MEETING.

March 27, 28, 1906.

Committee met on call of President with all members present.

Bonds of the Secretary and Treasurer were presented, and on motion approved.

Secretary was instructed to make contract for the 56th Regiment Band of Fort Dodge, Iowa, through their manager, Geo. W. Tremain, for an engagement of five days and four nights at State Fair of 1906, for $750.00 in full compensation.

On motion, it was decided to erect a new cattle barn, immediately west of cattle barn No. 12, and the Superintendent of Grounds was instructed to move barns No. 10 and 11, occupying site; one to north of barn No. 1 and the other to east of barn No. 13.

Executive Committee Meeting.

April 3, 4, 1906.

Committee met on call of President with all members present.

The matter of night show for the State Fair of 1906 was taken up and continued.

The Committee, on behalf of the State Board, extended to Colonel Thomas of the Eleventh Cavalry, stationed at Fort Des Moines, an invitation to participate in the programme on Soldier's Day, Tuesday, August 28th, with full regiment of troops.

The Secretary was instructed to ask for bids on proposed new cattle barn.

Executive Committee Meeting.

April 25, 26, 27, 28, 1906.

Committee met on call of President with all members present.

Bids for construction of the cattle barn were received and opened, and after a comparison of amount of bids on frame and brick construction, on motion it was the unanimous opinion of the Committee that it should be of brick construction, and Messrs. Small & Winder being the lowest bidders thereon, contract was duly awarded.

Bids for construction of display cases for Exposition building and ice box and cooling room for Dairy building were received and opened, and all bids, in the opinion of the Committee, being too high, bidders were requested to revise plans and submit bids at later date.

Comunication from the American Cotswold Association by their secretary, Mr. Frank Harding, Waukesha, Wisconsin, asking that an additional $25 be offered as premiums for Cotswold sheep, providing their association would duplicate the amount, was taken up and considered by the Committee and declined as being a deviation from the policy of the Board.

The Secretary was instructed and authorized as follows:

To purchase two turnstiles and chopper boxes for use at street car gate.

To purchase eighty-five street lights for camp grounds.

To secure sketch and estimate of cost of erecting four dining halls on State Fair Grounds.

To notify Messrs. S. Clark, Stephen Handy, Wm. H. Gordon and J. L. Betts to remove their buildings occupying site of proposed new dining hall.

To purchase from five to ten thousand advertising hangers, using cuts of views of Fair Grounds thereon.

To call a meeting of the Board for the 10th of May, for consideration of matters requiring their attention.

MEETING OF STATE BOARD OF AGRICULTURE.

May 10, 1906.

Met on call of Executive Committee and on roll-call the following members were found to be present: Morrow, Cameron, Simpson, Johnston, Brown, St. John, Legoe, Ledgerwood, McDonald, Olson, Pike, Packard and Phillips.

President Morrow stated the purpose of the meeting was to consider financial matters connected with permanent improvements upon the State Fair Grounds.

Secretary reported $24,780.00 available for improvements and repairs, and gave an outline of work under way and other improvements recommended by the Executive Committee, including the exhibit display cases for Exposition Building, reserve seats for Ampitheatre, new dining halls, etc., also reported the contract awarded for the building of a brick cattle barn 60x120 feet.

Proposition was received from Mr. Geo. S. Redhead for exchange of lots lying south of State Fair Grounds for acreage comprising that part of Fair Grounds lying east of section six (6), and on motion its consideration was deferred until the Board had looked over lots in question.

Board adjourned to meet at Fair Grounds at 2:00 o'clock P.M.

AFTERNOON SESSION.

Pursuant to adjournment Board met at Fair Grounds at 2.00 o'clock P.M.

After carefully considering the proposition offered by Mr. Geo. Redhead for an exchange of land, Mr. St. John offered the following motion: That the State Board of Agriculture, through its Executive Committee, recommend to the Executive Council, of the State of Iowa, an exchange of that portion of the land belonging to the State and known as the State Fair Grounds, lying east of the east line of section six (6) for the following described lots in Redhead's addition to Grant Park in the City of Des Moines, Iowa, viz:

Lots 1, 2, 3, 4, 5, in Block K,
Lots 1, 2, 3, 4, 5, 6, 7, in Block G,
Lots 1 to 42 inclusive in Block L,
Lots 1 to 14 inclusive in Block J,
Lots 1 to 14 inclusive in Block I,

Motion was duly seconded by S. B. Packard.

On roll-call members voted as follows:

Yeas, Morrow, Cameron, Simpson, Johnston, Brown, St. John, Legoe, Ledgedwood, McDonald, Olson, Pike, Packard and Phillips (13).

Nays, none.

Absent, Cummins, Koto, Wright, Storm, Curtiss and Ellyson (6).

President declared the motion carried, it having received the unanimous vote of the members present.

The matter of installing a telephone system on the grounds was taken up and on motion referred to Executive Committee with power to act.

Mr. Johnston moved that the Committee on Per Diem and Mileage be appointed.

The President appointed as such committee Messrs. Johnston, Pike and McDonald.

Mr. Ledgerwood moved that on and after July 1, 1906, the salary of the Secretary be fixed at $1,800 per year, payable monthly.

Motion was seconded and carried by unanimous vote.

Committee on Per Diem and Mileage submitted the following report and on motion of Mr. Ledgerwood was adopted:

NAME	DAYS	RATE	AMT.	MILES	AMT.	TOTAL
W. W. Morrow	3	$4.00	$12.00	82	$ 8.20	$20.20
C. E. Cameron	3	4.00	12.00	140	14.00	26.00
R. S. Johnston	3	4.00	12.00	158	15.80	27.80
C. W. Phillips	3	4.00	12.00	...	.....	12.00
W. C. Brown	3	4.00	12.00	102	10.20	22.20
R. T. St John	3	4.00	12.00	195	19.50	31.50
S. B. Packard	3	4.00	12.00	58	5.80	17.80
T. C. Legoe	3	4.00	12.00	100	10.00	22.10
C. F. Curtiss	.	....	.....	...	.....	.....
Jno. Ledgerwood	3	4.00	12.00	87	8.70	20.70
M. McDonald	3	4.00	12.00	65	6.50	18.50
O. A. Olson	3	4.00	12.00	155	15.50	27.50
H. L. Pike	3	4.00	12.00	20C	20.00	32.00
Total						$278.30

May 10, 1906.

(Signed)
R. S. Johnston,
H. L. Pike,
W. M. McDonald.

Mr. Morrow recommended to the Board the payment of per diem expenses to any member of the Board who had been called in to do special committee work during the winter, which recommendation on motion was duly approved by the Board.

On motion of Mr. McDonald Board adjourned to meet at call of President.

Executive Committee Meeting.

May 11, 1906.

Committee met at call of President with all members present.

Bids for furnishing exhibit display cases for Exposition Building were received and opened, and contract duly awarded to the Fort Dodge Manufacturing Company of Fort Dodge, Iowa, at price of $2,500.00.

Special Committee Meeting.

Chicago, Ill., June 10, 11, 1906.

Vice-President Cameron and Secretary Simpson were at Chicago for the purpose of meeting with the agents of the Western Theatrical Exchange and Gregory Fireworks Co., to further discuss plans for the night entertainment.

An effort was made to secure the release of the spectacular show "Moscow" that same could be put on at the Iowa State Fair, but without success.

Arrangements were completed for additional acts subject to the approval of the Executive Committee at their meeting of the 14th.

Secretary spent Monday looking into the seat proposition for the reserve seats to be placed in the grand stand.

EXECUTIVE COMMITTEE MEETING.

June 14, 1906.

Committee met as per arrangement, for consideration of matters coming before them on this date.

Bids for erecting proposed new Dining Hall Building on State Fair Grounds were received and opened, and Messrs. Callen Bros., of Des Moines, Iowa, being the lowest bidders thereon were duly awarded contract.

The Secretary was instructed to order roll tickets for general admissions, grand stand, and such other places as they could be used to advantage, for Fair of 1906; also to have tickets for reserved seats, in amphitheatre printed, with section and row printed thereon.

The office formerly occupied by the Superintendent of Grounds was assigned to the Superintendent of Police Regulations, and Mr. Deemer was instructed to build a small office for the use of his department.

It was decided to use only one orchestra during the Fair, and that in the Stock Pavilion.

As per resolution of the Board, the committee met with Mr. Redhead and discussed the matter of recommending exchange of a portion of the land known as the State Fair Grounds for lots lying south of the grounds. It was agreed that if the following proposition was made in writing by Mr. Redhead the committee would recommend to the Executive Council of the State of Iowa that such exchange be made, to-wit:

To exchange the eighty-two (82) lots lying south of the Fair Grounds between that and Dean Avenue on the south, as marked on the plat of the Redhead Addition to Des Moines, for all of that part of the State Fair Grounds on the east side lying east of the section line; and further, the State Board of Agriculture, through its Executive Committee, would agree to pay $50.00 each for twelve (12) additional lots adjoining above lots on the west, or $600.00 cash for the twelve lots.

The Secretary was instructed to engage Mrs. L. L. Babcock for Matron of the Woman's Building; also to arrange with Dr. G. N Ryan for medical service at the hospital in the Woman's Building during the Fair.

The Superintendent of Grounds was instructed to elevate the office of the Superintendent of Agriculture and place it just north of the music balcony.

The Superintendent of Grounds was instructed to construct an additional room to the office of Superintendent of Sheep.

EXECUTIVE COMMITTEE MEETING.

June 13, 14, 1906.

Committee met at call of President with all members present.

On motion the Superintendent of Grounds was instructed to erect a Fire Station on Grounds, as per plans, on site immediately west of Feed Barn.

The matter of display advertising for Fair of 1906, was considered, assignments duly made, and Secretary instructed to contract for same.

Bids for orchestral music in Stock Pavilion during Fair of 1906 were received and opened, and the bid of Mr. O'Connell being the lowest, contract was duly made at price of $80 for week.

Sketches of background for the night entertainment from the Scenic Company at Chicago, for a garden scene upon 6-ounce duck, 275 feet long and 24 feet high at 8 cents per square foot were received and considered. On motion, the Secretary was instructed to purchase said background and also to make arrangements for the necessary light in connection with the night show.

EXECUTIVE COMMITTEE MEETING.

August 6, 7, 1906.

Committee met at call of President with all members present, also Board member, Mr. Curtiss, Superintendent of Horse Department.

The entries in Horse Department being far in excess of stall room in same, additional room was provided to properly accommodate the exhibit.

All pens in the Swine Department have been assigned, and there being a further demand, the Superintendent of Grounds was instructed to build additional ones surrounding the Swine Show Pavilion, and the Secretary was instructed to notify Mr. Johnston, Superintendent of the Swine Department, that seventy-five additional pens would be furnished.

The Secretary was instructed to consult with Mr. Green, Superintendent of the Floricultural Department, and ascertain if a large tent would be satisfactory to take care of the overflow exhibit in his department, and if so to secure such tent and tables to be placed therein for the proper arangement of exhibits.

The Secretary was duly authorized and instructed in the issuing of complimentary tickets for Fair of 1906.

MEETING OF STATE BOARD OF AGRICULTURE.

August 23, 1906.

Board met at the President's office on the State Fair Grounds at 8 o'clock P.M. with the following members present: Messrs. Morrow, Simpson, Johnston, Phillips, Brown, St. John, Packard Legoe, Ledgerwood and Olson.

Matters pertaining to the departments and management of the Fair were discussed

Mr. Legoe moved that the opening and closing of sale of tickets be left entirely in charge of the Superintendent of Gates, and that the Treasurer instruct his ticket sellers to obey the orders of the Superintendent of Gates. Seconded by Mr. St. John. Motion carried.

On motion the Board adjourned.

MEETING OF STATE BOARD OF AGRICULTURE.

August 31, 1906.

Board met at the President's office on the State Fair Grounds at 10:30 A. M. with the following members present: Messrs. Morrow, Cameron, Simpson, Johnston, Brown, Packard, Legoe, Ledgerwood, McDonald, Pike and Wright.

The following pay-rolls were presented and allowed:

Privilege Department, $134.00. Presented by W. C. Brown.
Police Department, $1,658.25. Presented by M. C. McDonald.
Cattle Department, $216.11. Presented by S. B. Packard.
Treasury Department, $795 30. Presented by G. D. Ellyson.
Art Department, $433.10. Presented by T. C. Legoe.
Ticket Department, $218.55. Presented by J. C. Simpson.
Machinery Department, $171.95. Presented by Mr. Ledgerwood.
Sheep and Poultry Departments, $94.05. Presented by H. L. Pike
Speed Department, $259.10. Presented by C. E. Cameron.
Press Bureau, $165.00. Presented by Secretary.
Forage Department, $240.75. Presented by J. C. Simpson.
Secretary's Department, $508.63. Presented by J. C. Simpson.
Ticket Department, $102.00. Presented by J. C. Simpson.
Swine Department, $202.42. Presented by R. S. Johnston.
Horticultural Department, $95.65. Presented by J. C. Simpson.
Floricultural Department, $107.00. Presented by J. C. Simpson.
Dairy Department, $244.10. Presented by J. C. Simpson.
Grounds, $116.45. Presented by J. C. Simpson.

Board adjourned to meet at 7 o'clock Friday evening, August 31.

MEETING OF STATE BOARD OF AGRICULTURE.

FRIDAY EVENING, August 31, 1906.

Board met at President's office pursuant to adjournment, with the following members present: Morrow, Cameron, Simpson, Ellyson, Johnston, Phillips, Brown, St. John, Packard, Legoe, Curtiss, Ledgerwood, McDonald, Pike and Olson.

The President presented the matter of the exchange of real estate lying on the east side of the Fair Grounds for lots lying on the south side, known as the Redhead Addition. Mr. Curtiss moved to amend the resolution of the Board passed at a meeting held May 10, 1906, recommending the sale and purchase, as follows: That three additional members be appointed to act with the Executive Committee of the Board to secure an extension of the option of the tract of land south of the Fair Grounds, and that the East Side Commercial League be notified, and that the transaction be postponed for a period of ten days with a view to the money for the purchase of said land being raised and donated by said Commercial League. Motion was duly seconded and passed.

The President appointed the following members to act on this committee: Curtiss, Packard and Olson.

The President stated that Senator Newberry asked that a committee be appointed to confer with him in regard to amending the pure food law. Mr. Packard moved that the standing committee on the adulteration of foods, seeds and other products be authorized and instructed to immediately prepare by investigation the necessary facts with respect to the adulteration of foods and value of commercial feeds now on the market, for the purpose of ascertaining what legislation is needed, and that a sum not to exceed $250.00 be appropriated for the use of such committee. Motion seconded by Mr. Legoe and carried.

Mr. Curtiss moved that Mr. Frank Iams, of St. Paul, Nebraska, be barred from exhibiting at the Iowa State Fair for an indefinite period on account of noncompliance with rules and regulations of the Fair. Seconded by Mr. Packard. Motion carried.

The following pay-rolls were presented and allowed:

Gate Department, $1,322.93. Presented by Mr. Olson.

Agricultural Department, $341.75. Presented by Mr. St. John.

Itemized bill, $66.55. Presented by Mr. St. John.

Horse Department, $450.60. Presented by Mr. Curtiss.

On motion the President appointed as committee on Per Diem and Mileage, Messrs. Olson, McDonald and Pike.

On motion of Mr. St. John, the Secretary was authorized to issue premium warrant to Mr. George Monlux, of Rock Rapids, Iowa. for $50.00 to cover expense of making Lyon County Agricultural exhibit.

On motion all unfinished business was delegated to the Executive Committee with power to act.

The Committee on Per Diem and Mileage reported as follows.

NAME	DAYS	RATE	AMT.	MILES	AMT.	TOTAL
W. W. Morrow	20	$4.00	$80.00	82	$ 8.20	$ 88.20
C. E. Cameron	18	4.00	72.00	140	14.00	86.00
R. S. Johnston	19	4.00	76.00	158	15.80	91.80
C. W. Philips	19	4.00	76.00	...	.....	76.00
W. C. Brown	40	4.00	160.00	102	10.20	170.20
R. T. St. John	19	4.00	76.00	195	19.50	95.50
S. B. Packard	19	4.00	76.00	58	5.80	81.80
T. C. Legoe	19	4.00	76.00	100	10.00	86.00
C. F. Curtiss	19	4.00	76.00	37	3.70	79.70
John Ledgerwood	22	4.00	88.00	87	8.70	96.70
M. McDonald	19	4.00	76.00	65	6.50	82.50
O. A. Olson	19	4.00	76.00	155	15.50	91.50
H. L. Pike	19	4.00	76.00	200	20.00	96.00

(Signed)
O. A. OLSON,
H. L. PIKE,
M. MCDONALD.
Committee.

Mr. Johnston moved the report of the committee be adopted Seconded by Mr. Brown. Carried.

On motion of Mr. Johnston, duly seconded by Mr. Packard, and carried, the Secretary was authorized to draw warrants on the Treasurer of the State Board, covering deficiency of State appropriation for Assistant Secretary's salary.

On motion of Mr. Legoe, duly seconded and carried, the Secretary was authorized to employ a stenographer and clerk at a salary of $75 per month.

On motion the Board adjourned.

JOINT MEETING OF EXECUTIVE COMMITTEE AND SPECIAL COMMITTEE ON LAND.

September 18, 1906.

A joint meeting of the Executive Committee and the Special Committee appointed by the President, as per resolution of the Board on August 31st, for the purpose of making an effort to secure a tract of land lying between the south line of the Fair Grounds and Dean Avenue, met at the Secretary's office, with the following members present: Morrow, Cameron, Simpson, Curtiss, Packard and Olson.

Owing to the fact that some objection had been made by members of the East Des Moines Commercial League to the sale of land belonging to the State, which land was useless so far as the State Fair was concerned, and with the proceeds purchasing the land needed south of the grounds, the Secretary had invited a committee from the Commercial League to meet with the committee from the Department of Agriculture. The committee accepted the invitation and there was present J. A. McKinney, A. B. Elliott, J. K. Stuart and Isaac Brandt.

The objections offered by the members of the committee from the East Des Moines Commercial League could be summed up as follows:

First.—That the thirty-nine acres which it was proposed to sell should not be sold, but should be kept by the State for the purpose of establishing a Botanical Garden.

Second.—That the amount for which the State proposed to sell the land was too low ($150.00 per acre), it being their opinion that the land was worth much more than that.

Third.—That the amount to be paid for the land south of the Fair Grounds was greatly in excess of its value.

These objections were met by the members of the committee in the following statement:

First.—That as managers of the Iowa State Fair it was their duty to first look after the interests of the Iowa State Fair. Looking at it from this point of view the thirty-nine acres were absolutely worthless so far as being of any use for fair purposes, and that the land which it was proposed the State should buy was an absolute necessity to give sufficient room for the greatly increased live stock show and to in any way relieve the congested condition of that part of the grounds. Further that the Department of Agriculture, or the Executive Council of the State of Iowa, have no funds available for the purchase of the tract without the sale of a part of that already owned by the State, as per authority granted by the Twenty-sixth General Assembly. Therefore, under the conditions the State Board of Agriculture felt that in justice to the future welfare and continued success of the Iowa State Fair the sale and transfer should be made.

Second.—The objection to the selling price is easily met and those who think the price offered is too low were given an opportunity to place a larger offer or find some one who would, the Executive Council deciding to advertise for and receive bids on the thirty-nine acres up to and including September 29, 1906.

Third.—While the amount asked for the adjoining land might seem a little high the Board maintained that the value of a piece of land depended largelyl upon the purposes for which it is needed. Further, that the Department was compelled to expend large sums annually in providing temporary quarters for the overflow stock exhibits, and that sufficient room upon which to erect permanent buildings was not available without this additional land. Also that the amount expended annually for temporary quarters was greatly in excess of the amount demanded for the land over what might be its legitimate value for other purposes. It was further argued by the members of the State Board of Agriculture that now was the time to secure the land before any improvements were put upon it in which case the State would be compelled to pay in addition to the value of the land, if it was secured, an amount equal to if not greatly in excess of improvements. Also that it was the unanimous opinion of the Board that the receipts of the fair could be greatly increased with adequate facilities to properly exhibit the stock.

Following the meeting with the committee from the East Des Moines Commercial League the committee addressed a communication to the Executive Council, and appeared in person before said Council to present their views as to the very urgent necessity for immediate action.

To The Executive Council, State of Iowa. Gentlemen: Chapter 19, Acts of the Twenty-sixth General Assembly, gives to the Executive Council authority to sell a certain portion of the land belonging to the State known as the State Fair Grounds and with the proceeds derived from such sale to purchase for the State of Iowa additional lands to be used for State Fair purposes.

In accordance with this act we herewith present for your consideration a resolution passed by the State Board of Agriculture in session assembled May 10, 1906, with an amendment presented and accepted at a meeting of the Board held in the President's office at the State Fair Grounds August 31, 1906, and most emphatically recommend that your honorable body take such action as will secure for the State of Iowa as an addition to the State Fair Grounds the land embraced in blocks and lots set forth in the resolution.

After carefully considering the proposition offered by Mr. Redhead for an exchange of land, Mr. St. John offered the following motion: That the State Board of Agriculture, through its executive committee, recommend to the Executive Council of the State of Iowa an exchange of that portion of the land belonging to the State and known as the State Fair Grounds, lying east of the east line of section six (6) for the following described lots in Redhead's Addition to Grant Park in the city of Des Moines, Iowa, viz:

Lots 1, 2, 3, 4, 5 in Block K.
Lots 1, 2, 3, 4, 5, 6, 7 in Block G.
Lots 1 to 42, inclusive, in Block L.
Lots 1 to 14, inclusive, in Block J.
Lots 1 to 14, inclusive, in Block I.

Motion was duly seconded by Mr. S. B. Packard, and, on roll-call, members voted as follows:

Yea: Morrow, Cameron, Simpson, Johnston, Brown, St. John, Legoe, Ledgerwood, McDonald, Olson, Pike, Packard and Phillips—13.

Nay: None.

Absent: Cummins, Koto, Wright, Storms, Curtiss and Ellyson—6.

Mr. Curtiss moved to amend the resolution of the Board passed at the meeting held May 10, 1906, recommending the sale and purchase of land as follows:

"That three additional members be appointed to act with the Executive Committee of the Board to secure an extension of the option of the tract of land South of the Fair Grounds, and that the East Des Moines Commercial League be notified, and that the transaction be postponed for a period of ten days with a view to the money for the purchase of said land being raised and donated by said Commercial League."

This recommendation is made after a careful consideration of the objections presented by a committee representing the East Des Moines Commercial League and the recommendation of the Commercial League that the forty-acre tract be retained and used for other purposes. It is the unanimous judgment of the Board of Directors of the State Board of Agriculture that the purchase of the lots described in the above resolution is an urgent necessity and vital to the successful conduct of the Fair in providing for the greatly increased exhibits of the swine, horse, sheep and cattle departments, and that such purchase should be made immediately in order that plans for permanent improvements of the grounds may be settled now and presented to the legislature.

Respectfully submitted,

J. C. Simpson,

Secretary.

September 18, 1906.

On motion the committee adjourned.

Auditing Committee Meeting.

September 17, 18, 19, 1906.

Committee met on days above mentioned with all members present, as follows: W. C. Brown, C. W. Phillips, John Ledgerwood.

All claims on file were duly passed upon and the Secretary authorized to issue warrants in payment thereof.

Executive Committee Meeting.

September 19, 1906.

Committee met at call of President with all members present.

Petition of Mr. D. B. Gunn, Red Oak, Iowa, for return of entrance fee paid on County De Kayville, in 2:18 pacing stake, which horse died August 25, 1906, was considered and on motion the Secretary instructed to draw warrant in Mr. Gunn's favor for $15.00. being fifty per cent of amount paid in.

Petition of Mr. A. M. Utterback, Hedrick, Iowa, for return of entrance fee on his horse Radium, was considered, and on motion the Secretary authorized to make settlement with Mr. Utterback on basis of fifty per cent of amount paid in.

Additional facilities for water and light supply on State Fair Grounds was taken up and considered, and on motion the Secretary was instructed to confer with Prof. G. W. Bissell of the State College at Ames, and have him prepare plans and specifications covering projects as outlined by committee.

The matter of providing much needed additional closets on the grounds was taken up and considered, and on motion the Secretary was instructed to confer with Prof. A. Marston of the State College at Ames, and have him investigate and report on advisability of septic tank system.

Executive Committee Meeting.

October 25, 1906.

Committee met at call of President with all members present, also Board members Messrs. Ledgerwood, Brown and Phillips.

The purpose of the meeting was to consider an improved water-works system for the State Fair Grounds, and to receive Engineer Bissell's report and recommendations for same.

Mr. Bissell presented an extensive and comprehensible report and recommendations, which were duly considered and discussed and on motion the Secretary was authorized to advertise for bids for installation of system as recommended by Mr. Bissell, bids to close November 26, 1906.

Executive Committee Meeting.

November 26, 1906.

As per previous arrangement the committee met for the purpose of receiving and opening bids for proposed improved water-works system on State Fair Grounds. All members of the committee were present, as was also Prof. G. W. Bissell, engineer for the project.

Bids were duly received and opened, and as same were asked for and received on unit basis, they were turned over to Prof. Bissell with instructions to go over them carefully and make report on same to the State Board at December meeting, for their consideration and action.

Meeting of State Board of Agriculture.

Thursday, December 13, 1906.

Board met at the office of the Secretary at 9.30 o'clock a. m Meeting called to order with President Cameron in the chair, and on roll-call the following members were found to be present: Cameron, Brown, Simpson, Ellyson, Johnston, St. John, Reeves, Packard, Legoe, McDonald, Olson, Pike, Curtiss and Wright.

Hon. John C. Crockett, Clerk of the Supreme Court, administered the oath of office to the following newly elected members: Cameron, Brown, Reeves, St. John, Legoe, Olson, Phillips and Ledgerwood.

The Secretary, on behalf of the Executive Committee, presented a report reviewing in detail the improvements and work of the past year by said committee. The committee also discussed at length in said report contemplated improvements at the State Fair Grounds for the coming season. The report of the Executive Committee in full is filed in the office in the record books of the Department.

On motion of Mr. Legoe the Board proceeded to the election of Secretary and Treasurer.

Mr. Packard moved that J. C. Simpson be elected Secretary to succeed himself, and that the salary be fixed at eighteen hundred dollars ($1,800) per annum. Motion was duly seconded by Mr. Legoe. He moved that the President be instructed to cast the entire vote of the Board for Mr. Simpson. The vote was so cast and Mr. Simpson was declared Secretary for the ensuing year.

Mr. McDonald moved that Mr. G. D. Ellyson be elected Treasurer to succeed himself, and that the salary be fixed at one hundred dollars ($100) per annum. Seconded by Mr. Packard. Mr. McDonald moved that the President be instructed to cast the entire vote of the Board for Mr. Ellyson. The vote was so cast and the President declared G. D. Ellyson Treasurer for the ensuing year

The minutes of the Executive Committee meeting for September 10, 1906, and October 25, 1906, were read and approved.

The Boar authorized the Secretary to appoint an assistant secretary at a salary not to exceed $100 a month and a second assistant secretary and stenographer at a salary of $75.00 per month and such other help as was needed in the office during the year.

On motion Mr. Jas. H. Deemer was elected Superintendent of Grounds to succeed himself at a salary of $900 per year.

On motion of Mr. Packard the Board adjourned until 2 o'clock p. m.

AFTERNOON SESSION.

Board met at 2 o'clock P.M. with the following members present: Cameron, Brown, Simpson, Johnston, Phillips, St. John, Packard, Legoe, Curtiss, Olson and Pike.

Prof. G. W. Bissell of Ames, engineer employed by the Executive Committee to prepare plans and specifications for the water distribution system at the State Fair Grounds, appeared before the Board at invitation of the Secretary and submitted a report of the classification of bids opened by the Executive Committee on November 26 for the proposed water system. A detailed list of the bids properly classified by Mr. Bissell were put on file in the office of the Department of Agriculture and were made a part of their records.

Mr. Curtiss moved that the contract for the water distribution system as per bids submitted November 26th to the Executive Committee be awarded to the Des Moines Bridge & Iron Works of Des Moines, they being the lowest bidder on the quantities specified, all service pipe included. Motion was seconded by Mr. Brown and on roll-call the members voted as follows: Ayes: Cameron, Brown, Simpson, Johnston, Packard, Legoe, Curtiss, McDonald, Pike, Olson. Nays: None. President declared the motion to have carried and the contract was awarded to the Des Moines Bridge & Iron Works.

Mr. Bissell informed the Board that he was unable at this time to present a detailed report and recommendation for increased lighting facilities at the State Fair Grounds. He further stated that he hoped to have the matter in shape sometime early in February so that some action could be taken. After listening to the statement made by Mr. Bissell, Mr. Curtiss moved that the matter of lighting be referred to the Executive Committee with power to act. Motion was seconded by Mr. Olson and prevailed.

The Board elected the following gentlemen to act as marshals at the Iowa State Fair of 1907, and fixed their compensation at $35.00 each, each marshal to furnish his own horse and feed. Marshals elected were as follows: C. M. Akes of Leon, T. D. Doke of Bloomfield, T. J. Hudson of Winterset, and Carl Shields of Afton. Mr. Donald Hill of Storm Lake was elected to the position of Chief of Police.

The following list of assistants and heads of departments for the Fair of 1907 was presented by the Executive Committee and on motion of Mr. Curtiss report was adopted. List of assignments can be found in the premium list of 1907 and in the proceedings of the Board meeting to be found in the Secretary's office.

The matter of location for the erection of headquarters and rest pavilion for the State Fair Grounds was referred to the Executive

Committee with power to act. On motion of Mr. Packard compensation for all help and assistants for the Fair of 1907 was fixed the same as that of the Fair of 1906.

Considerable time was consumed in discussing what permanent improvements and repairs were needed at the State Fair Grounds and what recommendations, if any, should be presented to the Thirty-second General Assembly asking for appropriations for such work. It was agreed by the Board to recommend that an appropriation be made by the Thirty-second General Assembly to cover the expense of a swine barn and show pavilion and steel constructed amphitheatre, and for the purchase of twenty acres of land lying north of the present race track. The exact amount for each of the several items to be determined after plans had been prepared and estimates made by the architects. The Executive Committee was instructed to have plans and estimates made at once and when plans and estimates had been completed by the architect to have bills drawn and presented to the General Assembly for said appropriation.

On motion Board adjourned until 9 o'clock a. m. the following day.

MEETING OF STATE BOARD OF AGRICULTURE.

FRIDAY, December 14, 1906.

Board met at 9 o'clock a. m. with following members present: Cameron, Brown, Simpson, Johnston, St. John, Phillips, Packard, Curtiss, McDonald, Olson, Pike, Wright and Storms.

Minutes of the Board meeting of Thursday read and approved.

Mr. J. R. Sage, Director of the Iowa Weather and Crop Service, was before the Board and discussed proposed changes in his department, which, if adopted, would necessitate a discontinuation of the present manner of co-operation with the Government Weather Service.

On motion of Mr. Packard the matter was referred to the Executive Committee.

The revision of the premium list was then taken up. Mr. Curtiss presented revised classification for the Horse Department recommending an increase in premiums amounting to approximately $2,500, and on motion same was adopted. A detailed statement of the classification as adopted will be found in the premium list for 1907.

Mr. Packard moved that the advisability of adding a class for the Suffolk Punch Breed of horses be referred to the Superintendent of the Horse Department and the Executive Committee.

Mr. Packard presented recommendation for changes in the classification and added premiums in the Cattle Department, and on motion of Mr. St. John same was adopted.

Mr. St. John moved that $300 be added to the Iowa State College Scholarship Contest—prizes to be divided as follows: $325 for the boys and $175 for the girls. The rules and regulations governing said contests to be prepared by the Secretary. Motion was seconded by Mr. Johnston and prevailed.

On motion the revision of the premium list in the Poultry Department was referred to the assistant superintendent of the department, Mr. Shivvers, and the Secretary.

Mr. Pike presented recommendations for changes in the Sheep Department and moved their adoption. Motion prevailed.

On motion of Mr. St. John a revised classification for bees and honey was adopted with increase in premiums amounting to $2,400.

Revision of the classification in the Floriculture and Fine Arts Departments was referred to the respective superintendents and Secretary. On motion Board adjourned.

AFTERNOON SESSION.

Board met at one o'clock p. m. with members present as at morning session. Minutes of morning session were read and approved.

President announced as the auditing committee for the ensuing year Messrs. Phillips, Legoe and Johnston.

On motion of Mr. McDonald the reserve fund of $15,000 was continued for the ensuing year.

On motion of Mr. Reeves $200 was added to the classification in the Fruit Department.

Mr. Curtiss moved that the Executive Committee be authorized to obtain plans and estimates for the buildings for which it is proposed to ask appropriations from the legislature, and the architectural fees for the work for any buildings which may be erected be three (3) per cent, this to include such personal visits and consultations with the architects as may be deemed necessary by the Executive Committee. Motion was seconded by Mr. Olson and prevailed.

On motion of Mr. Packard the $200 addition to the premiums in the Floricultural Department recommended by Mr. Greene, were not allowed, for the reason that no funds would be available the present year for adding any additional floor space for such exhibit.

The following resolution was offered by Mr. Packard:

"*Whereas*, The alarming increase of noxious weeds in the State make it proper for the State Board of Agriculture to make an investigation with the view of ascertaining the best way to remedy these evils, and to suggest the necessary legislation and to impose upon the county supervisor or township trustee, or both, the authority of the law to eradicate these pests, therefore be it

Resolved, That the Committee on Adulteration of Foods, Seeds and Other Products are instructed to investigate the subject and report from time to time, and that the sum of five hundred dollars ($500) or as much thereof as may be necessary, is hereby appropriated for expenses for the year 1907."

On motion of Mr. Simpson resolution was adopted.

Mr. Packard presented the report of the committee on the adulteration of foods, seeds and other products and offered the following resolution in connection therewith:*

"*Resolved*, That the State Board of Agriculture adopt the report of the Committee on the Adulteration of Foods, Seeds and Other Products, and approve the bill, which is a part of their report, and directs that a copy of the report and bill be sent to the Governor of the State and that he be requested to consider the matter in connection with his forthcoming message to the Legislature, and that five hundred copies of the report and bill be printed for distribution."

On motion of Mr. St. John the report and resolution as offered by Mr. Packard was adopted.

Mr. Packard presented the bill of Prof. L. G. Michael for expenses incurred in collecting samples of seeds, etc., and making analysis of same in connection with the report of the pure food committee, amounting to $118.96, also bill covering expenses of Mr. Packard in the same work amounting to $12.52. On motion of Mr McDonald the bills were allowed and the Secretary instructed to issue warrants in payment thereof.

On motion of Mr. St. John all unfinished business was referred to the Executive Committee with power to act.

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* Report of committee published in part five of Year Book.

The Committee on Per Diem and Mileage reported as follows:

	DAYS.	RATE.	AMT.	MILES.	AMT.	TOTAL.
W. W. Morrow	3	$4.00	$12.00	82	$ 8.20	$20.20
C. E. Cameron	6	4.00	24.00	140	14.00	38.00
W. C. Brown	6	4.00	24.00	102	10.20	34.20
R. S. Johnston	6	4.00	24.00	158	15.80	39.80
C. W. Phillips	6	4.00	24.00	...	......	24.00
E. M. Reeves	3	4.00	12.00	123	......	12.00
R. T. St. John	6	4.00	24.00	195	19.50	43.50
S. B. Packard	6	4.00	24.00	58	5.80	29.80
T C. Legoe	6	4.00	24.00	100	10.00	34.00
C. F. Curtiss	4	4.00	16.00	39	3.90	19.90
John Ledgerwood		4.00	......	87	8.70	not present
M. McDonald	6	4.00	24.00	65	6.50	30.50
O. A. Olson	6	4.00	24.00	155	15.50	39.50
H. L. Pike	6	4.00	24.00	200	20.00	44.00

Total..$409.40

R. S. Johnston,
O. A. Olson,
H. L. Pike,
Committee.

On motion of Mr. Johnston the report was adopted.

On motion of Mr. Johnston the dates of the Iowa State Fair were fixed August 23-30th, inclusive. On motion of Mr. Johnston the Board adjourned sine die.

J. C. Simpson,
Secretary.

PART V.

REPORT OF COMMITTEE

ON

Adulterations of Foods, Seeds and Other Products, and Legislation Recommended

AND

Enacted by the Thirty-Second General Assembly, Regulating Same.

COMMITTEE

S. B. Packard
H. R. Wright
C. F. Curtiss

Submitted to the State Board of Agriculture at a meeting on December 14, 1906, and was unanimously accepted.

MR. PRESIDENT, OFFICERS AND MEMBERS OF BOARD.—Your committee, instructed at the last meeting to investigate the subject of adulterated agricultural seeds, concentrated commercial feeding stuffs, and condimental stock foods, beg leave to submit the following report:

The following states have laws on the subject of concentrated commercial feeding stuffs: North Carolina, Louisiana, Pennsylvania, Massachusetts, New Hampshire, Texas, Illinois, Ohio, Rhode Island, New York, Wisconsin, Maine, Michigan, Virginia, and Georgia. Maine and Kentucky have laws regulating the sale of seeds.

The brief time given the committee to investigate the extent of adulteration of these products made it proper to pursue the inquiry through experts on the subject. Professor Michael was, therefore, employed by your committee to visit the leading centers of the State, and to take samples of commercial feeding-stuffs on sale at the various points, and to make analyses. The detailed reports of the investigations are herewith submitted, and the earnest attention of the Board is called to them.

From the results of these investigations, your committee is certain that various commercial feeding-stuffs sold in our markets are generally adulterated, sometimes very grossly adulterated; that agricultural seeds sold for seeding purposes in this State are found to contain to an alarming degree the seeds of noxious plants, such as Canada thistle and quack grass; and that numerous condimental stock foods for which extraordinary claims are made are sold at a price out of all proportion to the cost of their ingredients, or to their nutritive or medicinal value. Your committee has, therefore, prepared a bill for an act designed to regulate the sale of these articles.

Following the laws of other states, the bill proposes a tag tax upon feeding-stuffs and stock foods, and a label specifying the ingredients in mixed feeds and condimental stock foods, and a statement of the percentages of crude protein, crude fat, and crude fiber, so that the purchaser may know the relative feeding value of the feeding-stuffs he purchases, and the ingredients in the condimental stock foods for which he pays a high price. The bill seeks to prohibit the sale of seeds for seeding purposes if certain noxious weed seeds are present, and requires labeling of seeds when harmless weed seeds are present as an adulterant.

Your committee, therefore, recommends that the matter be brought to the attention of the Legislature with the approval of the Board of Agriculture for the bill herewith submitted.*

Respectfully,

S. B. Packard,
C. F. Curtiss,
H. R. Wright,
Committee on the Adulteration of Foods, Seeds, and Other Products.

RESULT OF ANALYSES AND INVESTIGATIONS MADE BY PROF. L. G. MICHAEL, CHEMIST AT THE IOWA EXPERIMENT STATION, FOR THE COMMITTEE.

CONDITIONS OF FEEDING-STUFFS AS SOLD IN IOWA.

The keynote of the attitude of not a few feed producers to the feed buyers, was recently given by a miller in Burlington. This miller was running corn hulls into his wheat bran. To the objection that this was an adulteration, and that corn hulls did not contain as much protein as wheat bran, he replied, "What in —— does a farmer know about protein."

We buy a concentrated feed for its protein. It is protein that feed producers guarantee their feeds to contain. Bran, shorts and middlings, by-products of all kinds, are quoted at market prices governing pure, standard feeding-stuffs, containing a standard percentage of protein. We pay the price, but almost nowhere in Iowa are we able to get a standard commodity in return.

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* Bill as passed by the Thirty-second General Assembly published in lieu thereof on page 196.

Analysis of the samples of blood meal received during the last year show this feed to run 1.25 to 2.58 per cent below the guarantees of the producers. Tankage guaranteed to contain 60 per cent protein, has dropped as low as 47.25 per cent; and thirteen analyses give an average of 6 per cent below the standard set by the company placing this feed-stuff on the market. This is equivalent to a cash shortage of $3.30 to the ton. Meat meal, also guaranteed to contain 60 per cent protein, has averaged 2.13 per cent below that standard, one sample dropping as low as 52.47 per cent. Both products, stated to be free from stomach contents, have been found to contain undigested oat hulls and hair. Even as high as 4.4 per cent of silica (the basic constituent of sand) has been found in some samples.

Of thirteen samples of cotton-seed meal examined, only one was found to be "prime," or up to the standard of 41.2 per cent protein, set by the Cotton-seed Crushers' Association. The samples below grade are heavily loaded with cotton-seed hulls, which brings the protein content from 1 to 3.5 per cent below guarantee.

The by-products of the wheat flour industry vary greatly, according to the process of milling. The quality of the output from a number of mills also fluctuates according to the other grains that are being ground, whose inferior offal is run into the wheat by-products; or fluctuations may be due to other adulterating material at hand.

The averages of our analyses of the mill feeds sold in Iowa show that most of these products are below the standards of those manufacturers that stamp their guarantee on the sacks containing their feeds.

Low grade flour is standardized at 21 per cent protein. The average of ten analyses of flours sold in Iowa is 14.71 per cent, or 6.29 per cent low.

Middlings should contain 18 to 20 per cent protein. We have found an average of eighteen analyses to give 17.12 per cent, or 0.88 to 2.88 per cent low.

Mixed feed should contain 18 to 19 per cent protein. Averaging the six analyses we have made, gives 16.19 per cent, or 2.81 per cent low.

Wheat shorts should run 17 to 19 per cent protein. Our average of thirty analyses of shorts sold in Iowa is 15.59 per cent, or from 1.41 to 3.41 per cent low.

Wheat bran should contain from 15 to 17 per cent protein. We found an average of twenty-six analyses to give 14.92 per cent, or 0.08 to 2.08 per cent low.

It is a common practice to run scowerings, corn hulls and offal oat hulls, and the hulls of weed seeds into the bran, the ground weed seeds and screenings having been run into the shorts. The effect that this practice has on the quality of the bran and shorts depends upon the extent of the adulteration. At a few mills where such admixtures were made, it was possible to get samples of pure shorts and bran direct from the duster; and other samples from the packer at which the sacking of these by-products for shipment was made.

The analyses, reduced to the same moisture content, are given below:

BRAN.

(Amounts stated in pounds per hundred weight.)

Name of Mill Co.	Water	Protein (from duster) Pure	Protein (from packer) Mixed
Shannon & Mott, Des Moines.... ...	8.75	15.63	15.26

SHORTS.

(Amounts stated in pounds per hundred weight)

Manufacturer	Water	Protein (from duster) Pure	Protein (from packer) Mixed
Shannon & Mott, Des Moines........	9.48	18.40	16.40

At some mills a system of "padding" is carried on. That is, a sack is partially filled with shorts and the balance of the sack filled with bran. The whole is then sold at shorts prices. Sweepings from the floor are also used as padding.

Corn and oat chops is one of the most widey used feeds in the State, and one that shows the greatest variety of composition. Many local millers complain that they cannot buy corn and oats and grind them at a profit in competition with the brands of this product that are shipped in from outside their vicinity. These "shipped-in" chops invariably contain oat hulls, light oats, ground cob, and milling offal that render it possible for them to be offered at a figure the local grinder cannot touch.

The cereal mills are offering oat hulls at about $7.00 per ton. Corn and oat chop is selling at from $15.50 to $25.00 per ton. From a number of samples in our collection it is evident that the temptation to mix oat hulls with this feed has proven too great for many millers to resist. We have found this feed to be composed of:

Pure ground oats and pure corn meal (free from hulls).
Pure ground oats and pure ground corn.
Ground oats, corn and corn cob.
Whole oats and cracked corn.
Light oats, corn and corn bran.
Ground oats, oat hulls and ground corn.
Shredded oat hulls and cracked corn.

The mixed feed industry presents a problem of unusual interest. Such feeds are made to sell and too often but little regard is paid to the intrinsic value of the mixture. A number of manufacturers use shredded oat hulls as the base of each of the feeds they place on the market—combining this offal with corn, barley, and other grains. Such feeds are marketed under fanciful or standard names, at fanciful or standard prices. It is the common practice to work oat and corn hulls, and other milling offal into the mixed feeds Iowa farmers are buying.

One such mixed feed was found to contain:

Ground alfalfa and molasses	600 pounds
Crushed grains, not corn	750 pounds
Crushed corn	250 pounds
Oat and cereal hulls	400 pounds

This feed, selling at $20.00 a ton, contained 14.04 per cent protein.

Another feed contained:

Ground alfalfa	731 pounds
Corn hulls	357 pounds
Linseed meal	476 pounds
Blood meal	289 pounds
Ground corn	147 pounds

This feed contained 23.95 per cent protein, and sold at $2.50 per hundred pounds; when oil meal containing 32.90 per cent protein was selling at $1.60 per hundred pounds. The oil meal containing 9 per cent more protein was selling at 90 cents per hundred less than this mixed feed.

Our markets are surfeited with condimental and tonic foods, more or less valueless.

The preposterous claims under which many of these stock foods and tonics are sold are absurd. Some of them are fraudulently misrepresentative; the virtues claimed for them being contradictory or impossible. The following, taken from the printed matter on the outside of the same box, illustrates the gullery practiced by these manufacturers:

"One measure full is mixed with their regular feed every night for a week or ten days; then you can feed morning and night for a few days; after that you can reduce the amount of grains you were feeding. Three quarts of corn, oats or meal, well mixed with one ounce of ——— Food, is better for an animal than four quarts without it.

"For Horses:

"To prevent colic or disease—one tablespoonful, three times a day.

"For cows:

"To prevent abortion, garet, milk fever, and dairy diseases—one tablespoonful daily.

"For Poultry:

"To prevent roup and all other diseases—one tablespoonful to each

"For Hogs:

"To cure cholera and hog diseases—one tablespoonful scalded and mixed with milk and fed daily."

This marvelous cure-all and do-all was "scientifically" (?) compounded of:

Anise seed
Carroway seed
Foenugreek seed
Flax seed
Tumeric
Sassafras bark
Poplar bark
Slippery elm bark

These are not recognized in veterinary practice as medicines.

Gentian.
Blood root.
Powdered charcoal.
Common salt.
Pepper.

The beneficial drugs it did contain were in such small amounts, that when given in tablespoonful doses there was not enough medicine present to affect the animal in any way.

The experiments* conducted by the Iowa and other State Experiment Stations have not demonstrated that the benefits derived from the use of such foods warrants the exorbitant outlay of money necessary for their purchase. Many of the drugs of which these foods and tonics are compounded are excellent remedies, when used in proper strength. Common salt is a wonderful digestive and profitable to use at 50 cents per hundred pounds. The farmer is accustomed to feeding a little sulphur now and then. Red pepper is not a bad remedy, nor is gentian, nor is charcoal. But it is folly to buy these simple drugs heavily adulterated with bran, shorts, pine bark or oil meal at $4.00 to $14.00 per hundred pounds, simply because they contain a little foenugreek, anise, fennel or sassafras to make them smell pleasant, and because the manufacturer says their use will double the flow of milk of your cows, or will give your horses those Dan Patch qualities that smash records.

Opposed to the claims of manufacturers, we have the evidence from experiments performed by the various stations:

The Iowa Experiment Station found that the use of International Stock Food increased the cost of beef production twenty-four per cent; that Standard Stock Food, when fed to cattle, reduced the value of each bushel of corn consumed twenty-four per cent, and increased the cost of beef production eleven per cent. In another experiment, Standard Stock Food, when fed to swine increased the value of each bushel of corn only one and two-tenths per cent; that Iowa Stock Food decreased the value of each bushel of corn fed one-half per cent.

Pratt's Stock Food, fed at the Massachusetts Station, increased the cost of milk and butter production ten per cent. Acme Stock Food, fed at Kansas Station, increased the cost of butter fat production 18.7 per cent. Globe Stock Food, fed at the same station, increased the cost of butter fat production 6.3 per cent. At the Indiana Station, American Stock Food was found to increase the cost of pork production 15.3 per cent. At the same station, Rauh's Stock Food, fed in conjunction with Standard Stock Food, decreased the cost of pork production nine-tenths of one per cent.

These condiments and tonics can be compounded by a local druggist at a fraction of their present cost.

Iowa is not only disregarding the maintenance of even an average quality of the feeds produced within her borders, but has become the dumping-ground for those feed-stuffs that are of too inferior a quality to meet the requirements of adjoining states, protected by a consistent feeding-stuff inspection law.

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* We have not space at this point to go into the details of condimental foods and tonics. Those interested will find the subject discussed fully at the close of this report.

The following tables gives the composition of the feeding-stuffs and condimental stock foods received by the Iowa State College Experiment Station during the past year:

BLOOD MEAL.

Laboratory No.	Manufacturer	Person Submitting Sample	Water	Fat	Protein	Crude Fiber	Ash	Carbohydrate
99	Swift & Co., Chicago, Ill	Alonzo Harvey	8.36	0.68	86.64	1.25	2.75	0.32
154	Swift & Co., Chicago, Ill	----	8.89	1.95	85.42	1.41	2.17	0.16
300	Swift & Co., Chicago, Ill	Animal Husbandry Dept., Ames, Ia	8.32	1.37	85.64	1.53	2.50	0.64
527	Swift & Co., Chicago, Ill	D. L. Pascal, De Witt, Ia	7.78	0.26	85.55	1.83	3.88	0.70
765	Armour & Co., Omaha, Neb	W. L. De Witt, Elliot, Ia	8.37	1.79	83.75	1.67	3.85	0.57

MISCELLANEOUS TANKAGES

Laboratory No.	Manufacturer	Person Submitting Sample	Water	Fat	Protein	Crude Fiber	Ash	Carbohydrate
125	Jacob Decker & Sons, Mason City, Ia	----	4.93	11.63	----	2.02	25.16	----
155	Jacob Decker & Sons, Mason City, Ia	Jacob Decker & Sons, Mason City, Ia	3.51	11.80	43.93	2.07	31.73	6.96
532	Jacob Decker & Sons, Mason City, Ia	E. L. Stock, Ventura, Ia	4.08	10.94	36.98	3.51	33.72	10.77
613	Montgomery Ward & Co., Chicago, Ill	Geo. Page, Noble, Ia	3.07	14.59	53.51	7.45	14.90	6.45
660	Darling & Co., Chicago, Ill	E. J. Smith, Dows, Ia	2.31	10.51	51.49	5.59	25.22	4.81

SWIFT'S DIGESTER TANKAGE

Guaranteed Protein 60 Per Cent.

Laboratory No.	Location of Factory	Person Submitting Sample	Water	Fat	Protein	Crude Fiber	Ash	Carbohydrate	Remarks
36	Omaha	Chris Lehman, Slater, Ia	5.65	12.05	51.76	9.15	17.15	4.24	Stomach contents and hair. Silicia 3.33 per cent.
37	Omaha	Chris Lehman, Slater, Ia	7.12	9.11	57.46	4.03	14.61	7.67	Small amount of undigested oat hulls. 1.71 per cent silica.
107	Chicago	Chris Lehman, Slater, Ia	7.26	10.14	54.64	9.58	14.71	3.67	Stomach contents. Silica 1.09 per cent.
299	Omaha	Animal Husbandry Dept., Ames, Ia	12.61	7.45	53.54	7.24	9.62	9.54	Stomach contents.
326		D. L. Pascal, De Witt, Ia	8.38	13.72	50.22	6.20	9.50	11.98	Large amount of stomach contents. 2.13 per cent silica.
568	Chicago	H. Lieberknecht, Letts, Ia	9.92	13.02	57.47	4.27	12.29	3.03	Small amount of stomach contents. 1.09 per cent of silica.
575	Chicago	L. T. Spellman, Waverly, Ia	6.23	13.45	58.35	3.19	14.00	4.78	Small amount of stomach contents. 1.66 per cent silica.
581	Omaha	L. S. Olsen, Wiota, Ia	3.56	10.98	47.45	7.07	26.10	4.84	Large amount of stomach contents and hair. Silica 4.41 per cent.
601		Chas. Nichols, Rutland, Ia	4.78	12.87	56.77	4.65	16.05	4.88	Stomach contents. Silica 1.64 per cent.
695	Omaha	L. S. Olsen, Wiota, Ia	4.31	13.56	54.14	3.70	19.59	4.70	Stomach contents. Silica 0.88 per cent.
706	Omaha	E. D. Converse, Estherville, Ia	5.76	13.31	57.11	4.65	14.64	4.53	Stomach contents. Silica 1.58 per cent.
713		Animal Husbandry Dept., Ames, Ia	4.66	8.05	55.52	3.56	21.79	6.42	Stomach contents. Silica 1.59 per cent.
736		Mercantile Co., Maple Hill, Ia	7.65	10.69	47.28	2.24	25.34	6.80	Large amount stomach contents, few undigested oat hulls, hair, silica.

SAMPLES PURPORTED TO BE ARMOUR'S MEAT MEAL

Guaranteed Protein, 60 Per Cent.

Laboratory No.	Person Submitting Sample	Water	Fat	Protein	Crude Fiber	Ash	Carbohydrate	Remarks and Impurities
650	Iowa State College, Ames, Ia	10.13	8.62	56.43	6.53	11.54	6.75	Stomach contents. Silica, 2.17 per cent.
657	Norman M. Leonard, Waukee, Ia	9.92	13.05	56.12	4.65	12.76	3.50	Stomach contents. Silica, 2.47 per cent.
750	D. J. Jenks, Coon Rapids, Ia	8.70	8.91	56.01	9.54	12.38	4.46	Small amount of stomach contents and some hair. Silica, 2.37 per cent.
753	Chris Lehman, Slater, Ia	4.25	11.08	59.23	9.44	13.44	2.56	Large amount of stomach contents and some hair. Silica, 0.84 per cent.
754	Chris Lehman, Slater, Ia	7.93	11.38	57.15	7.87	11.63	4.04	Small amount of stomach contents. Silica, 2.21 per cent.
764	W. L. De Witt, Elliott, Ia	------	------	59.84	------	------	-----	
755	Wm. Lent, Ankeny, Ia	6.82	12.95	53.69	8.25	13.09	2.20	Large amount of hair and stomach contents. Silica, 2.13 per cent.
757	Wm. Anderson & Co., Morse, Ia	7.45	13.81	56.91	7.93	12.60	1.30	Stomach contents. Silica, 1.54 per cent.
771	Ross Grier, Deep River, Ia	9.65	------	57.65	------	------	-----	
785	Iowa State College, Ames, Ia	4.93	15.67	64.40	4.04	9.26	1.70	Small amount of stomach contents. Silica, 1.48 per cent.
793	Henry C. Flagg, Lake City, Ia	8.01	11.00	56.14	7.16	15.01	2.68	Stomach contents. Silica, 4.53 per cent.
800	James Thompson, Ankeny, Ia	4.75	13.31	58.61	8.46	12.48	2.39	Silica, 3.04 per cent.
807	E. S. Overholt, Wyoming, Ia	------	------	30.02	------	------	-----	
814	F. Fowler, Ames, Ia	9.71	------	52.47	-----	------	-----	Purported to come from Sioux City.
953	F. Fowler, Ames, Ia	6.56	------	60.37	-----	------	-----	

COTTON-SEED MEAL

Prime Meal Should Contain 41.2 Per Cent Protein

Laboratory No.	Purported to be Manufactured by	Person Submitting Sample	Water	Fat	Protein	Crude Fiber	Ash	Carbohydrate	Remarks
40	American Cotton Oil Co., Chicago, Ill.	F. D. Dutton, Mt. Pleasant, Ia.	8.72	10.28	39.90	9.73	6.05	25.32	Cotton seed hulls.
41	Hunter Bros., St. Louis, Mo	F. D. Dutton, Mt. Pleasant, Ia.	6.30	8.65	39.98	7.84	6.92	30.31	Cotton seed hulls.
124	Dixy Brand—Hum., Goodwin & Co., Memphis, Tenn	Nye, Schneider, Fowler Co., Mason City, Ia.	8.22	13.07	38.54	8.34	7.64	24.19	Cotton seed hulls.
138	De Sota C. O. Co., Mansfield, Ia.	Menery & Evans, Williamsburg, Ia.	4.99	7.15	38.89	12.35	6.23	30.39	Cotton seed hulls.
148	Humphrey, Goodwin & Co., Memphis, Tenn.		9.82	8.14	40.47	8.30	7.17	26.10	Very few hulls.
209	Chickasha C. O. Co., Chickasha, I. T.	W. H. Thompson, Vinton, Ia.	6.73	9.67	40.25	9.74	5.46	28.15	Very few hulls.
567	Kaiser & Co., Memphis, Tenn	E. A. Fleming, Dexter, Ia.	5.97	5.32	37.80	9.48	5.00	36.43	Cotton seed hulls.
569	F. W. Brode & Co., Memphis, Tenn	H. Lieberknecht, Letts, Ia.	6.23	4.35	40.85	6.74	3.21	33.62	Very few hulls.
581	Kiser & Brown, Memphis Tenn	H. D. Lenooker, Avoca, Ia.	5.36	9.81	38.85	7.74	8.67	29.57	Cotton seed hulls.
663	Hunter Bros., St. Louis, Mo	P. J. Moore, Cascade, Ia.	5.54	7.15	41.03	8.24	6.74	31.30	Almost free from hulls.
690	Chickasha C. O. Co., Chickasha, I. T.	R. M. Switzer, Ladora, Ia.	7.90	5.25	38.87	11.34	5.91	30.73	Cotton seed hulls.
711	Chickasha C. O. Co., Chickasha, I. T.	C. W. Bricker, Ladora, Ia.	7.50	6.17	38.61	12.92	5.81	28.99	Cotton seed hulls.
712	J. Roberts & Co., Memphis, Tenn.	Clarence Jenks, Bayard, Ia.	6.59	7.77	39.80	10.80	7.31	27.73	Cotton seed hulls.

LINSEED MEAL

Laboratory No.	Purported to be Manufactured by	Person Submitting Sample	Water	Fat	Protein	Crude Fiber	Ash	Carbohydrate
59	Midland L. O. Works, Minneapolis, Minn	W. H. Warburton, Independence, Ia	8.58	7.43	31.15	9.81	5.75	37.28
103	Midland L. O. Works, Minneapolis, Minn	M. Miller, Iowa City, Ia	7.34	7.62	32.18	11.43	5.15	36.28
116	Midland L. O. Works, Minneapolis, Minn	E. Meissner, Reinbeck, Ia	8.56	7.30	32.43	11.24	5.59	34.88
130	Capital City L. O. Works, Des Moines	Des Moines Linseed Works, Des Moines, Ia	11.05	7.15	30.36	10.04	8.29	33.11
153	Daniels Linseed Co., Minneapolis, Minn	E. L. Beard, Decorah, Ia	10.80	7.85	30.72	10.24	5.21	35.17
210	Northern L. O. Co., Minneapolis, Minn	W. H. Thompson, Vinton, Ia	11.15	9.34	30.75	10.58	5.55	32.63
306	Sioux City Oil Works, Sioux City, Ia	M. A. Pember, Onawa, Ia	6.35	9.15	32.62	8.89	5.42	37.57
531	Capital City L. O. Works, Des Moines	J. W. McCoal, Bayard, Ia	10.50	6.67	32.24	8.76	6.16	35.67
580	Sioux City L. O. Works, Sioux City, Ia	Mark Miller, Galva, Ia	7.58	6.40	33.38	9.07	5.84	37.73
582	Midland L. O. Works, Minneapolis, Minn	C. Jenson, Grand Mound, Ia	6.50	8.03	31.71	9.69	6.52	37.55
583	Midland L. O. Works, Minneapolis, Minn	L. M. Utley, New Hampton, Ia	6.83	8.00	31.36	10.10	6.19	37.52
585	Midland L. O. Works, Minneapolis, Minn	Carl J. Gustafson, Laurens, Ia	7.15	9.18	32.32	9.98	6.18	35.19
643	Midland L. O. Works, Minneapolis, Minn	N. J. Wright, Cylinder, Ia	6.34	10.32	31.01	9.80	5.97	36.55
669	Midland L. O. Works, Minneapolis, Minn	R. C. McLaughlin, Mapleton, Ia	7.57	8.56	31.24	9.42	5.29	37.92
788	Capital City L. O. Works, Des Moines	Lockwood & Co., Ames, Ia	8.54	6.82	32.75	8.81	5.65	37.40

BRAN

Laboratory No.	Purported to be Manufactured by	Person Submitting Sample	Water	Fat	Protein	Crude Fiber	Ash	Carbohydrate	Adulterated With
42	Geo. C. Christenson & Co.	O. M. Healy, Bedford, Ia.	8.71	4.06	14.52	10.46	6.56	55.69	
43	Red Oak Mills, Red Oak, Ia.	O. M. Healy, Bedford, Ia.	7.94	4.37	14.00	11.01	6.64	56.04	
44	Hopkins Mills, Hopkins, Mo.	O. M. Healy, Bedford, Ia.	7.56	3.47	14.87	9.25	6.27	58.58	Barley, oat hulls.
212	Washburn & Crosby, Minneapolis, Minn.	W. H. Thompson, Vinton, Ia.	12.28	3.98	12.73	13.65	6.69	50.67	
216	Centennial Mill Co., Avoca, Ia.	Centennial Mill Co., Avoca, Ia.	12.72	4.22	12.37	12.38	7.53	50.78	
228	Lake City Milling Co., Lake City, Ia.	Lake City Milling Co., Lake City, Ia	12.01	3.42	16.75	11.42	6.45	49.95	
311	City Roller Mills, Sloan, Ia.	M. A. Pember, Onawa, Ia.	9.49	4.51	13.78	10.87	7.07	54.28	
379	Adel Milling Co., Adel, Ia.	Adel Mill Co., Adel, Ia.	10.22	3.82	17.06	12.15	6.86	49.89	
387	Struve Bros., Almont, Ia.	Struve Bros., Almont, Ia.	8.02	3.87	16.41	12.89	4.52	54.29	
395	Henry Dobling, Lost Nation Ia	H. Dobling, Lost Nation, Ia.	6.09	3.82	12.59	12.25	6.09	59.16	
392	Crystal Mills, Co. Bluffs, Ia.	Crystal Mills, Council Bluffs, Ia.	7.68	4.01	15.22	14.68	6.95	51.46	
393	Rock Valley Roller Mill, Rock Valley, Ia.	Rock Valley Roller Mill, Rock Valley, Ia.	7.02	4.37	13.60	15.16	7.80	51.96	
398		D. Muilenburg, Perkins, Ia.	7.35	4.59	13.52	11.06	7.03	56.45	
401	Marten Bros., Sioux City, Ia.	Marten Bros., Sioux City, Ia.	8.98	4.13	15.92	14.38	8.15	48.44	
448	Estherville Roller Mills, Estherville, Ia.	Estherville Roller Mills, Estherville, Ia.	5.75	6.20	14.61	12.32	6.98	54.14	
453	Wm. Fischer, Augusta, Ia.	Wm. Fischer, Augusta, Ia.	5.28	4.16	12.82	12.19	6.44	59.11	
456	Hull Roller Mills, Hull, Ia.	Hull Roller Mills, Hull, Ia.	5.01	4.96	15.22	12.06	6.58	56.17	
570	Wells Milling Co., Wells, Minn	H. Liberknecht, Letts, Ia.	6.90	5.28	14.61	10.64	5.99	56.58	Cereal hulls.
576	New Prague Milling Co., New Prague, Minn.	M. R. Daniels, Pulaski, Ia.	4.50	6.43	15.22	13.21	7.72	52.92	
590	Pillsbury Mills, Minneapolis	Melcher Luchinger, Elgin, Ia.	6.22	4.89	16.41	14.55	6.99	50.93	
631	A. C. Felt, Superior, Neb.	A. C. Felt, Superior, Neb.	8.88	5.14	15.31	10.35	6.28	51.04	
641	Model Mills, Emmetsburg, Ia.	N. J. Wright, Cylinder, Ia.	6.73	5.33	15.44	9.82	6.02	56.66	

684	New Prague Milling Co., New Prague, Minn	H. M. Peckhorn, Union, Ia	8.31	3.15	14.48	12.69	7.25	54.12	Oat hulls and ground screenings.
728	H. G. Rathburn, Dallas Center	A. D. Kelly, Granger, Ia	6.13	6.07	18.33	13.28	6.34	49.85	
766	Washburn & Crosby, Minneapolis, Minn	Washburn & Crosby, Minneapolis, Minn	10.04	4.34	15.55	14.64	7.38	48.05	
787	Eagle Roller Mill Co., New Ulm, Minn	Iowa State College, Ames, Ia	11.48	6.17	16.58	13.96	7.00	44.81	Oat hulls.

STANDARD MIDDLINGS (SHORTS)

15	Geo. C. Christenson & Co., Red Field, S. D	O. M. Healy, Bedford, Ia	7.87	4.88	15.57	7.45	5.13	59.10	
104	Watson Mill Co., Wichita, Kan	M. Miller, Iowa City, Ia	9.92	4.14	18.00	3.59	2.73	61.62	
105	Crosty Mills, Topeka, Kan	D. N. Troyer, Kalona, Ia	9.65	4.60	17.10	6.94	4.90	56.81	
107	Eagle Roller Mills, New Ulm, Minn	M. Miller, Iowa City, Ia	8.54	5.03	15.22	10.17	5.00	56.04	
108	C. S. Christenson, Medelia, Minn	D. N. Troyer, Kalona, Ia	9.75	4.69	15.05	8.61	4.76	57.14	Screenings and cereal hulls.
110	Fulton Mill Co., Sioux Falls	D. N. Troyer, Kalona, Ia	10.26	4.11	13.12	4.54	3.00	61.97	
111	Wells Mill Co., Wells, Minn	D. N. Troyer, Kalona, Ia	8.74	6.34	15.22	10.99	5.60	53.11	Heavily adulterated with screenings and cereal hulls.
120	Sleepy Eye Mill Co., Sleepy Eye, Minn	John Meissner, Reinbeck, Ia	9.02	4.92	17.32	8.27	4.23	56.24	
217	Centennial Mill Co., Avoca, Ia	Centennial Mill Co., Avoca, Ia	10.75	3.51	15.27	11.69	3.37	55.41	
225	Lake City Milling Co., Lake City, Ia	Lake City Milling Co., Lake City Ia	9.85	3.35	14.57	14.59	2.76	54.88	
352	White Roller Mills, White, S. D	Thomas Bicket, Dinsdale, Ia	10.10	4.30	14.52	6.12	3.20	61.76	Oat hulls and cornmeal.
378	Adel Mill Co., Adel, Ia	Adel Mill Co., Adel, Ia	8.96	1.68	13.26	3.84	3.57	65.69	
381	Stenzel Bros., Little Rock, Ia	Stenzel Bros., Little Rock, Ia	8.12	4.35	14.05	9.17	2.82	61.49	
447	Estherville Roller Mills, Estherville, Ia	Estherville Roller Mills, Estherville, Ia	6.13	5.36	17.11	3.64	3.14	64.62	
452	Wm. Fischer, Augusta, Ia	Wm. Fischer, Augusta, Ia	4.87	3.85	17.72	6.28	3.19	64.09	
558	Boudel Roller Mills, Boudel, S. D	W. A. Barlow, Clear Lake, Ia	6.18	5.17	13.69	6.54	4.20	64.22	
577	Evert Angsbaum & Co., Waseca, Minn	M. R. Daniels, Pulaski, Ia	5.72	4.07	15.05	5.98	1.82	67.36	
586	Carson Mill Co., Carson, Ia	R. E. Williams, Jr., Oakland, Ia	5.83	3.84	17.01	4.23	4.54	61.55	

STANDARD MIDDLINGS (SHORTS)—CONTINUED.

Laboratory No.	Purported to be Manufactured by	Person Submitting Sample	Water	Fat	Protein	Crude Fiber	Ash	Carbohydrate	Adulterated With
587	Walnut Mill Co., Walnut, Ia.	R. E. Williams, Jr., Oakland, Ia.	5.88	6.85	17.98	5.10	3.95	60.24	
597	Lehman Bros., Corning, Ia.	L. B. Smith, Corning, Ia.	6.84	3.23	15.05	6.71	4.06	64.11	
602	Plymouth Mill Co., Le Mars, Ia	Chas. C. Nicholls, Rutland, Ia.	7.59	4.74	16.11	5.86	3.95	61.75	
642	Model Mills, Emmetsburg, Ia	N. J. Wright, Cylinder, Ia.	7.70	5.91	17.46	5.09	3.37	60.47	
672	Washburn & Crosby, Minneapolis, Minn.	Jas. P. Murphy, Dyke, Ia.	9.84	6.18	17.73	6.54	5.28	54.43	
674	Plymouth Mill Co., Le Mars, Ia	J. T. Rundlet, Humboldt, Ia.	7.32	3.40	16.19	5.80	4.35	62.94	
681	New Prague Mill Co., New Prague, Minn.	H. M. Peckhorn, Union, Ia.	6.84	5.56	17.27	6.91	5.26	58.16	
696	Missouri Valley Mills, Missouri Valley, Ia.	P. Livengood, Castana, Ia.	11.12	4.86	12.29	4.53	3.07	64.13	Corn meal, bran.
697	Sac City Mill Co., Sac City, Ia	A. Rhodes, Cooper, Ia.	6.25	4.80	11.67	9.75	2.96	64.57	Corn meal, dirty.
708	Springfield Mills, Springfield, Minn	Henry Busse, Jr., Marshalltown, Ia	11.07	4.16	16.05	7.59	4.73	56.40	
726	Ida Grove Milling Co., Ida Grove, Ia.	C. E. Kimm, Blairstown, Ia.	6.52	4.36	14.91	7.13	3.08	64.00	Corn meal and oat hulls.
738	C. S. Christenson, Medelia, Minn	County Farm, Algona, Ia.	8.72	4.51	16.17	9.49	5.09	56.02	Cereal hulls and corn meal.

FLOUR MIDDLINGS

Laboratory No.	Purported to be Manufactured by	Person Submitting Sample	Water	Fat	Protein	Crude Fiber	Ash	Carbohydrate	Adulterated With
128	Northwestern Con. Mills, Minneapolis, Minn.		9.09	4.55	15.35	7.77	5.01	58.23	
211	Washburn & Crosby Co., Minneapolis, Minn.	W. H. Thompson, Vinton, Ia.	11.62	3.82	15.16	9.21	4.06	56.13	
271	Minneapolis Mills, Minneapolis, Minn.	W. S. Bear, Decatur, Ia.	8.28	3.39	15.09	2.80	4.39	65.75	
307	Plymouth Milling Co., Le Mars, Ia.	M. A. Pember, Onawa, Ia.	5.77	4.47	14.95	5.71	4.21	64.89	Cereal hulls.

353	Sleepy Eye Mills Co., Sleepy Eye, Minn	Thos. Bicket, Dinsdale, Ia	10.69	4.48	16.71	7.28	4.55	56.29	
399	D. Mulienburg, Perkins, Ia	D. Mulienburg, Perkins, Ia	8.19	5.34	18.28	5.44	4.47	58.28	
402	Martins Bros., Sioux City, Ia	Martins Bros., Sioux City, Ia	8.85	4.32	17.50	8.47	4.74	56.11	
555	Washburn & Crosby Co., Minneapolis, Minn	Harvey Bussee, Jr., Marshalltown, Ia	5.42	6.72	18.27	9.67	5.14	54.78	
573	Waterloo Mills, Waterloo, Ia	L. T. Spellman, Waverly, Ia	8.25	5.33	18.46	5.38	4.39	58.19	
596	Washburn & Crosby Co., Minneapolis, Minn	L. B. Smith, Corning, Ia	6.11	5.98	19.73	8.83	4.41	54.64	
615	Montgomery Ward & Co., Chicago, Ill	Geo. Page, Noble, Ia	7.25	5.03	16.64	8.82	6.20	56.06	
625	Puritan Mill Co	A. E. Howes, Williams, Ia	7.83	4.90	15.62	6.85	4.04	60.71	This sample practically shorts.
658	Northwestern Con. Milling Co., Minneapolis, Minn	M. L. Mosier, W. Liberty, Ia	8.52	4.10	17.51	7.08	4.36	58.43	
678	Northern Grain Co., Cedar Rapids, Ia	Wm. Simonsen, Hudson, Ia	9.25	5.10	18.86	5.14	3.70	57.94	
707	Washburn & Crosby Co., Minneapolis, Minn	Henry Bussee, Jr., Marshalltown, Ia	5.87	6.85	17.54	5.32	4.80	59.62	
709	Springfield Mills, Springfield, Minn	Henry Bussee, Jr., Marshalltown, Ia	10.50	3.40	17.21	5.73	4.17	58.99	
767	Washburn & Crosby Co., Minneapolis, Minn	Washburn & Crosby Co., Minneapolis, Minn	9.27	5.87	19.08	6.71	9.65	49.32	
783	Chapin & Co., Minneapolis, Minn	Iowa State College, Ames, Ia	11.25	3.05	16.27	11.06	4.25	54.12	Oat hulls.

MIXED FEED AND MILL RUN

boratory No.	Purported to be Manufactured by	Person Submitting Sample	Water	Fat	Protein	Crude Fiber	Ash	Carbohydrate	Remarks
390	H. E. Rounds, Rock Valley, Ia	H. E. Rounds, Rock Valley, Ia	10.29	5.24	15.36	6.81	4.11	58.19	
391	Crystal Mill and Grain Co., Council Bluffs, Ia	Crystal Mill and Grain Co., Council Bluffs, Ia	9.20	6.17	15.75	7.23	4.35	57.30	
402	Marten Bros., Sioux City, Ia	Marten Bros., Sioux City, Ia	8.86	4.32	17.50	6.14	4.74	58.44	
627		Nichols Masskaut, Birmingham, Ia	9.46	3.46	15.05	6.09	4.64	61.30	$25 per ton, bran and middlings mixed.
637	A. C. Felt, Superior, Neb	A. C. Felt, Superior, Neb	7.57	2.75	13.21	12.23	6.42	57.82	
770	Washburn & Crosby Co., Minneapolis, Minn	Washburn & Crosby Co., Minneapolis, Minn	8.91	4.37	20.30	6.57	6.02	53.83	

LOW-GRADE FLOUR—"RED DOG"

Laboratory No.	Purported to be Manufactured by	Person Submitting Sample	Water	Fat	Protein	Crude Fiber	Ash	Carbohydrate
106	C. S. Christenson Co., Medelia, Minn	D. N. Trayer, Kalona, Ia	10.29	3.34	13.56	2.33	1.48	69.00
109	Wells Mill Co., Wells, Minn	D. N. Trayer, Kalona, Ia	9.71	3.46	14.48	3.15	2.22	66.98
151	Winona Flouring Mills, Winona, Minn	C. Freeburg, Decorah, Ia	11.36	5.25	13.76	2.22	2.14	65.27
218	Centennial Mill Co., Avoca, Ia	Centennial Mill Co., Avoca, Ia	10.45	3.68	11.07	9.50	1.10	64.20
324	Northern Grain Co,. Cedar Rapids, Ia	D. L. Pascal, De Witt, Ia	9.64	3.24	15.83	8.32	2.54	60.43
397	Henry Dobling, Lost Nation, Ia	Henry Dobling, Lost Nation, Ia	9.48	4.10	14.87	2.19	3.50	65.86
455	Hull Roller Mills, Hull, Ia	Hull Roller Mills, Hull, Ia	6.51	2.48	13.65	1.80	1.41	74.15
457	Hull Roller Mills, Hull, Ia	Hull Roller Mills, Hull, Ia	7.08	3.20	12.25	0.60	0.70	76.17
683	New Prague Milling Co., New Prague, Minn	H. M. Peckhorn, Union, Ia	7.84	3.36	16.05	8.55	5.65	58.55
768	Washburn & Crosby Co., Minneapolis, Minn	Washburn & Crosby Co., Minneapolis	9.53	6.05	21.56	4.84	4.06	53.96

COMPONENTS OF CONDIMENTAL STOCK FOODS

Brand	Manufacturer	Dilutent	Most Evident Ingredients Vegetable and Mineral Drugs	Protein	Moisture	Price Per 100 lbs.
1 Advance Stock Food	Advance Stock Food Co., Advance, Iowa	Linseed Meal	Common Salt, Charcoal, Foenugreek, Gentian	27.64	8.08	--------
2 Acme Stock Food	Acme Stock Food Co., Chicago, Ill	Linseed Meal	Common Salt, Foenugreek, Charcoal, probably Pepper or Ginger	23.76	8.24	--------
3 Armstrong Stock Food	Armstrong Mfg. Co., Colfax, Iowa	Linseed Meal	Charcoal, Pepper, Chaff and Cereal Hulls, Common Salt, Epsom Salts, Foenugreek, Ash 28.97	19.43	7.25	$ 8.00
4 Baum Stock Food	United Breeders Co. of America, Syracuse and Chicago	Linseed Meal	Charcoal, Epsom Salts, Glauber Salts, Foenugreek, Common Salt, Pepper and probably Gentian	22.18	9.86	9.00
5 Barkliowa Stock Food	Barkliowa Stock Food Co., Sac City, Iowa	Linseed Meal	Foenugreek, Gentian, Ginger, Common Salt and Bran	19.47	7.20	--------
6 Blood Root	Dr. Pratt's Medical Co., Indianapolis	-------------	Ash 81.84, Venetian Red and Lime	0.00	1.66	--------
7 Anti-Shrink	Thornhill's	Salt	Made up almost entirely of Common Salt, with that which appears to be Mill Offal, Alum and Fine Charcoal, Ash 85.25	3.24	1.86	--------
8 Clover Brand Stock Tonic	Stock Food Co. of America, Minneapolis, Minn	Pine Bark	Common Salt, Foenugreek, Ginger, Charcoal, Gentian, Capsicum, Sassifras	3.33	7.19	14.00
9 Capitol Stock Food	Capitol Stock Food Co., Tiffin, Ohio	Bran and Milling Offal	Anise Seed, Foenugreek, Common Salt, Epsom Salts, Mustard, Charcoal, Pepper, Ash 34.82	11.67	6.80	--------
10 Dr. Dick's Malted Food	Dr. Dick's Malted Food Co., Davenport, Iowa	Ground Brewers' Grain	Linseed Meal, Salt and Foenugreek	26.14	7.96	10.00
11 Eureka Stock Food	Eureka Stock Food Co., Payton, Iowa	Linseed Meal	Epsom Salts, Charcoal, Common Salt, Milling Offal	12.83	17.62	--------
12 Eureka Stock Food	Schrader Drug Co., Iowa City, Iowa	Linseed Meal	Common Salt, Charcoal, Pugent, probably Gentian, Foenugreek	27.46	10.03	10.00
13 Fleck's Stock Food	Fleck's Stock Food Co., Tiffin, Ohio	Linseed Meal	Gentian, Foenugreek, Epsom Salts, Common Salt, Sulphur, Charcoal	17.37	10.49	5.00
14 Farmer's Condition Powders	Farmers' Stock Conditioner Co., Dows, Iowa	Linseed Meal	Straw, Carroway Seed, large amounts of Epsom Salts, Common Salt, Foenugreek	21.06	7.30	35c 1¼ lb pack

COMPONENTS OF CONDIMENTAL STOCK FOODS—CONTINUED

Brand	Manufacturer	Dilutent	Most Evident Ingredients Vegetable and Mineral Drugs	Protein	Moisture	Cost Per 100 lbs.
15 Gold Coin Stock Food	Gold Coin Stock Food Co., Chicago, Ill	Bran and Mill Offal	Common Salt, Pepper, Sulphur	13.11	12.53	12.00
16 Great Western Stock Food	----------	Corn	Linseed Meal, Chaff, Charcoal, Common Salt, Gentian	31.71	11.88	--------
17 Globe Stock Food	O. Robinson & Co., Chicago, Ill	Linseed Meal	Milling Offal, Chaff, Foenugreek, Charcoal, Common Salt, probably Gentian	22.75	11.58	7.50
18 Hess Stock Food	Hess & Clark Medical Co., Ashland, Ohio	Bran	Charcoal, Rock Salt, Cereal, Linseed Meal, Foenugreek, Bean or Pea Hulls, Epsom Salts, bitter like Gentian, probably Pepper, Iron Sulphate	11.94	11.09	--------
19 Hawkeye Stock Food	Hawkeye Stock Food Co., Red Oak, Iowa	Linseed Meal	Common Salt, Charcoal, probably Gentian	18.95	8.91	10.00
20 International Stock Food	International Stock Food Co., Minneapolis, Minn	Bran and Milling Offal	Charcoal, Pepper, Gentian, Common Salt, numerous Seeds	12.30	11.39	14.00
21 Iowa Stock Food	Iowa Stock Food Co., Jefferson, Iowa	Linseed Meal	Charcoal, Foenugreek, Gentian, Common Salt, Sulphur	28.95	6.43	--------
22 Lee's Stock Food	Geo. H. Lee Co., Omaha, Neb	Oil Meal	Common Salt, Sulphur, Foenugreek, Pepper	27.44	6.13	$ 7.00
23 Lee's Hog Remedy	Geo. H. Lee Co., Omaha, Neb	Charcoal	Dried Blood, Copper, Sulphate, Epsom Salts, Common Salt, Stibnite (Black Antimony), Charcoal, Ash 64.49 per cent	4.24	4.00	6.00
24 Lee's Egg Maker and Chick Grower	Geo. H. Lee Co., Omaha, Neb	Dried Blood	Linseed Meal, Charcoal, Common Salt, Epsom Salts, Foenugreek	38.87	11.78	50c for 4 lbs.
25 Lycol Stock Food	----------	Linseed Meal	Common Salt, Charcoal	18.50	10.74	--------
26 More's Stock Food	More's Stock Food Co., Council Bluffs, Iowa	Linseed Meal	Sulphur, Charcoal, Tree Bark, Common Salt	19.91	5.65	--------
27 Olive Stock Food	Marshall Oil Co., Marshalltown, Iowa	Linseed Meal	Iron Oxide, Glauber Salts, Epsom Salts, Sand, Ash 27.23 per cent, and Aromatic Substance, Sulphur, Charcoal	24.32	7.86	7.00
28 Peerless Stock Food	Anthony Stock Food Co., Marshalltown, Iowa	Linseed Meal	Common Salt, Epsom Salts, Foenugreek, probably Gentian	20.39	11.78	--------

29 Prussian Stock Food		Wheat Offal & Oil Meal	Sulphur, Common Salt, Sassifras, bitter like Gentian, Red Pepper, Foenugreek, Charcoal	14.79	9.49	
30 Pratt's Stock Food	Pratt's Food Co., Philadelphia	Corn & Bran	Common Salt, Foenugreek, Charcoal and probably some pungent, as Gentian	14.44	8.26	5.00
31 Raven Stock Food	Raven Stock Food Co., Chicago, Ill	Linseed Meal	Charcoal, Common Salt, Corn and a pungent, probably Gentian	14.91	9.79	
32 Raleigh Stock Food	Raleigh Stock Food Co., Freeport, Ill	Chaff and Cereal Hulls	Foenugreek, Charcoal, Pepper, Common Salt	16.36	8.32	
33 Rex Stock Food	Rex Co., Omaha, Neb	Wheat Feed	Foenugreek, Common Salt, Charcoal	13.22	11.71	
34 Standard Stock Food	F. E. Sanborn Co., Omaha, Neb	Linseed Meal	Common Salt, Foenugreek, Gentian, Sulphur	24.89	13.34	10.00
35 Stockman's Stock Food		Wheat Feed	Foenugreek, Anise Seed, Pepper, Common Salt, Charcoal	11.43	5.79	
36 Sherman's Animal Tonic	Sherman Food Co., Cedar Rapids, Iowa	Linseed Meal	Charcoal, Pepper, Common Salt, and probably Gentian	22.31	9.04	
37 Security Stock Food	Security Food Co	Milling Offal	Common Salt, Pepper, Iron	8.75	6.47	
38 Universal Stock Food	Kaplan Chemical Co., Sioux City, Iowa	Bran	Large amount of Epsom Salts, Common Salt, Bark of Trees, Iron Sulphate, Sassifras Root	11.72	11.30	12.00
39 Wilbur's Stock Food	Wilbur Stock Food Co., Milwaukee, Wis	Wheat Feed	Linseed Hulls, Pepper, Common Salt, Foenugreek, Charcoal, probably Gentian	14.98	12.36	25c 1½ pack.
40 Wilbur's Seed Meal	Wilbur Stock Food Co., Milwaukee, Wis	Wheat Feed	Seeds of various kinds, Charcoal, Screenings, Common Salt	24.48	9.25	25c
41 Winona Stock Food	Winona Stock Food Co., Winona, Minn	Linseed Meal	Resin, Common Salt, Charcoal, Epsom Salts, Pepper, Foenugreek	18.23	6.77	
42 Watkin's Pabular Stock Food	J. R. Watkins Medical Co	Linseed Meal	Anise Seed, Foenugreek, Milling Offal, Common Salt, Gentian trace, Barks of several kinds, Roots, Ginger, Sulphate of Iron, Sulphur, Ash 34.34 per cent	12.05	6.76	

Table giving principal drugs employed in compounding stock foods; their use in medicine, the dose for a horse, cow, sheep and pig; with the wholesale price of each:

Name of Drug	Use in Medicine	Dose	Cost per * Pound
Antimony (black)	Use only under direction of a veterinary		19c to 20c
Antimony	(See tartar emetic, which is the only compound of antimony fit for internal use.)		
Alum (potash alum)	An astringent both internally and externally. If used continuously in either large or small does the digestive processes are injured	For horse or cow, 2 to 4 dr.; sheep or pig, not over 1 dr.	1¾c to 1 4-5c
Anise	Of no medicinal value	Unimportant	6¼c to 6½c
Asafetida	Carminative and anti-spasmodic; not commonly used in veterinary practice	Horse or cow, 1 oz.; sheep or pig, 1 to 2 dr.	14c to 18c
Bloodroot	Irritant in large doses; has been used as a gastric tonic		9c to 10c
Barberry	Not recognized in medicine; has been used long ago as an alterative and a diuretic	Unimportant	11c to 13c
Cayenne (capsicum)	A stomachic in atonic indigestion	Horse, 20 gr. to 1 dr.; cow, 1 to 2 dr.	11c to 11¼c
Common salt	Emetic, cathartic, digestive, alterative, stomachic and antiseptic	As a cathartic, cow, ½ to 1 lb.; sheep 1 to 2 oz.	⅝c
Coriander seed, popularly used because of its supposed stomachic and carminative properties	Not used by the profession	Unimportant	4c to 5½c
Charcoal (animal)	An absorbent for irritant gases; used chiefly internally for digestive disorders associated with bloating	Horse and cow, 1 to 2 oz.; sheep and swine	$1.77
Charcoal (wood)	Same as above, but is more irritating; hence is not given internally	Do not use wood charcoal	Under 10c
Chlorate of potash	Irritant and digestive; stimulates secretion of saliva and urine; rarely used internally	Horse and cow, 1 to 4 dr.; sheep and swine	8½c to 9¼c
Elecampane root	Has been used as stomachic in dyspepsia	Unimportant	16c to 18c

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* **Note—Prices taken from Paint, Oil and Drug Reporter New York and Merck's Report.**

Epsom salts	Laxative in small doses; purgative in large doses; one of the best for cattle and sheep; febrifuge and alterative	Laxative for horse and cow, 2 to 3 oz.; purgative, horse, 1 lb.; cow, 1 to 2 lbs.; sheep, 4 to 6 oz.	9c
Foenugreek	Not recognized in veterinary medicine; claimed to be a stomachic	Unimportant	3c to 3¼c
Fennel	Not recognized in veterinary medicine	Unimportant	5c to 5¼c
Glauber's salt	Laxative and purgative; diuretic and febrifuge	As laxative, horse, 2 to 4 oz.; cow, 1 to 2 lbs.; sheep, 2 to 4 oz.	5c to 5½c
Gentian	Tonic (one of the best)	Horse, 1 oz.; cow, 1 to 2 oz.; sheep or swine, 1 to 2 dr.	4¼c to 4½c
Ginger	Stomachic and carminative	Horse, 2 dr. to 1 oz.; cow, 1 to 10 oz.; sheep and swine, 1 to 2 dr.	14c to 15c
Hemp (Indian)	In large doses controls pain, spasm, nervous irritability	Horse, 1 oz	3c to 3½c
Iron (oxide)	Not used internally		½c to 1¼c
Iron (sulphate)	Blood tonic, astringent, gastric irritant	Horse or cow, 1 to 2 dr.; sheep or swine, 10 to 20 gr.	
Juniper berries	Stomachic, carminative and diuretic	Horse and cow, 1 to 2 oz.; sheep or swine, 2 to 4 dr.	3½c to 4c
Lobelia	Gastric irritant		10c to 12c
Licorice root	Demulcent and slightly laxative	Unimportant	4c to 4½c
Lime carbonate (whiting)	Anti-acid	Horse, 1 to 2 oz.; cow, 2 to 4 oz.; sheep and swine, 2 to 4 dr.	1 1-5c
Mustard	Mild stomachic, emetic and carminative	Horse, 4 to 6 dr.	3½c to 4c
Mandrake root	Cathartic, rarely used, slow and uncertain in action	Unimportant	5½c to 6c
Oak bark (tanic acid)	Used externally chiefly, rarely as a mild astringent	Horse, 2 to 4 dr.	3c to 4c
Pine bark	Not recognized in medicine	Unimportant	4½c to 5c
Poplar bark	Not recognized in medicine	Unimportant	3½c to 4c
Walnut leaves	Not recognized in medicine	Unimportant	24c
Resin	Rarely used and then externally as a protectant and astringent; it is claimed to be a general astringent and diuretic	Unimportant	2c
Pepper (black)	Stomachic	Horse, 1 dr.; cow, 2 dr.; sheep and swine, 10 gr. to 1 dr.	9¾c to 10¼c
Sulphur	Mild laxative; stimulant; useful externally as an anti-parasite	Laxative, horse, 1 to 4 oz.; cow, 3 to 4 oz.; sheep or swine, 1 oz.	$1.85 to $2.15
Sage	Not recognized in medicine	Unimportant	3¼c to 5c
Soda carbonate	Too caustic for internal use	Do not use	8½c to 9c
Soda bicarbonate	Anti-acid in excessive fermentation of gastric tract	Horse and cow, 1 oz.	1.3c to 1.7c
Saltpetre	Dipurant diuretic	Horse and cow, 1 oz.	10½c

Table giving principal drug employed in compounding stock foods—Continued.

Name of Drug	Use in Medicine	Dose	Cost per Pound
Senna	Not commonly used in medicine; mild laxative and diuretic	Horse and cow, 4 to 5 oz.; sheep and swine, 1 to 2 oz.	4c to 9c
Tartar emetic	Does not exert any appreciable action on horses and cattle		
Tumeric	Not used in medicine	Unimportant	2c to 3c

COST OF MANUFACTURING CONDIMENTAL STOCK FOODS AND TONICS.

Where is the value in these compounds that warrants the manufacturer in charging for them such exorbitant prices—especially since it has been demonstrated that these foods and tonics do not work the miracles they are warranted to perform? The great bulk (one-half or more) is made up of some common feeding-stuff that markets at not more than $1.50 per hundred pounds. In one instance, ground pine bark was used, which cannot cost much more. About one-tenth is common salt and another one-tenth is charcoal. This leaves three-tenths to be made up of such simple drugs and remedies as anise, sulphur, ginger, red pepper, sassafras and the like.

On page 39 of Merk's Report for February, 1906, is the following formula:

RURAL CONDITION POWDER.

Foenugreek	3 oz.	Calculated to the basis of 100 pounds.	8 pounds
Cream tartar	3 oz.		8 pounds
Powdered gentian	3 oz.		8 pounds
Powdered sulphur	3 oz.		8 pounds
Pottassium nitrate	3 oz.		8 pounds
Resin	3 oz.		8 pounds
Black antimony	3 oz.		8 pounds
Flaxseed meal	16 oz.		44 pounds

Tablespoonful in feed night and morning.
Put in paraffine lined boxes and label.
Sell for 25 cents.

This condition powder would cost the maker at wholesale $6.56 per hundred, and at the above price of 25 cents per box would retail at $10.82 per hundred pounds.

Cream tartar costs 32 cents per pound wholesale, and is so expensive that few manufacturers of these commodities use it. We have found none in the stock foods we have examined.

The average run of stock foods and tonics cost only a fractional part of the above, which is objectionable for general purposes, on account of the black antimony it contains. It, however, serves to show the amounts in which these drugs are sometimes used.

Three tons of .... stock food, made after the following formula, was sold in one city in Iowa during 1905:

Powdered gentian	1 pound
Powdered ginger	1 pound
Foenugreek	5 pounds
Common salt	10 pounds
Bran	50 pounds
Oil meal	50 pounds
Total	117 pounds

Manufactured at (the wholesale cost of the drugs) $1.65, or $1.50 per hundred pounds. Probably no stock food manufactured costs the maker less than this, and not one costs the maker more than the "Rural Condition Powders," quoted from Merk's Report. Between these two prices falls the cost of manufacturing the bulk of stock foods and tonics offered to the farmer.

If the farmer substituted 8 pounds of ginger for the cream tartar in the formula for "Rural Condition Powders," and 4 pounds of cayenne pepper for the antimony, added 20 pounds of powdered charcoal, 20 pounds of common salt, and 100 pounds of bran, he would have a mixture so near to the average stock food that neither he nor his stock could tell the difference. After paying the druggist 50 per cent profit on the ingredients, this mixture would still cost only $4.42 per hundred pounds.

A tablespoonful of such mixture fed night and morning would not put his stock on the market in thirty days less time, nor would it double the flow of milk of his dairy herd; neither would it prevent hog cholera, abortion, roup in chickens, nor glanders in horses. It is yet to be proven that any stock food or tonic will do this. The feeding of domestic animals is and always will be a matter of applied common sense, and will never be amenable to hokus-pokus gullery. But such a stock food would have the merit of being extremely inexpensive, besides having as much merit in other ways as any of its class.

STOCK FOODS ARE NOT OF UNIFORM COMPOSITION.

The following tables of regular feeding-stuff analyses made of the stock foods and tonics sent to the chemical section laboratory show great variation in the proximate constituents present. These analyses demonstrate the fact that the proportions in which the drugs and other substances are mixed are not uniform and that these mixtures are neither standard nor homogenous. This being true, the feeder when using one lot of some of these mixtures will be giving a certain dose, when using a lot sold under the same name, but of later make will be giving another dose. The cause for this is that instead of being "scientifically blended compounds" most of these substances are merely mechanical mixtures of great variability of composition.

COMMON SALT IN STOCK PREPARATIONS.

One of the most interesting features of the tables which follow is the amounts of common salt these products contain. The salt ranges from one pound to over eighty-five pounds in each one hundred pounds of mixture. This explains why stock relish these compounds and, after having once tasted them, are eager for more.

PROXIMATE COMPOSITION OF STOCK FOODS AND TONICS.

The tables that conclude this bulletin give the proximate composition of all stock foods and tonics we have examined. The percentages of common salt will be found in the last column.

PROXIMATE COMPOSITION OF STOCK FOODS AND TONICS

Lab. Number	Brand	Person Submitting Sample	Water	Ether Extract	Protein	Crude Fiber	Ash	Carbo-hydrate	Common Salt in Ash
529	Advance Stock Food	B. J. Dieter, West Side, Ia.	8.08	8.45	27.64	7.00	13.33	35.50	-----
528	Acme Stock Food	Paul Worf, Sumner, Ia.	9.39	7.00	24.00	7.13	5.96	46.52	6.87
119	Acme Stock Food	John Meissner, Reinbeck, Ia.	7.10	8.23	23.53	7.32	10.07	43.75	8.07
958	Armstrong Stock Food	Package Sample	7.25	5.11	19.43	------	28.97	------	19.67
732	Anti-Shrink	Prof. Curtiss, Ames, Ia.	1.83	.20	3.24	------	85.25	------	85.20
550	Baum Stock Food	W. H. Braden, Dows, Ia.	9.35	9.22	23.16	17.20	15.36	25.71	-----
55	Baum Stock Food	J. L. Matre, Independence, Ia.	9.95	11.61	19.03	17.74	16.39	25.28	5.67
140	Baum Stock Food	R. S. Miller	11.18	10.74	21.06	17.50	16.67	22.85	5.98
121	Baum Stock Food	Wilson & Robinson, Reinbeck, Ia.	8.97	6.93	25.46	17.95	15.11	25.58	6.00
342	Barkliowa	Sac City, Ia.	7.20	24.11	19.47	------	2.90	------	1.01
118	Bloodroot	John Meissner, Reinbeck, Ia.	1.66	0.00	0.00	0.00	81.84	------	1.33
967	Clover Brand Stock Food	Package Sample	7.19	5.42	3.33	------	20.92	------	16.72
956	Capitol Stock Food	Package Sample	6.80	2.50	11.67	8.06	34.82	36.15	21.85
955	Dr. Dick's Malted	Package Sample	7.96	4.66	26.14	------	11.69	------	7.79
562	Eureka Stock Food	Jacob Blumer, Wheatland, Ia.	17.62	1.81	12.83	------	8.61	------	13.45
805	Eureka Stock Food	S. R. Larson, Shaller, Ia.	10.03	7.02	27.46	------	18.02	------	11.91
136	Fleck's Stock Food	E. U. Thomas, Granville, Ia.	8.16	13.11	28.67	13.12	8.40	28.54	2.79
265	Fleck's Stock Food	N. S. Williams, Jamison, Ia.	16.21	2.62	13.91	11.97	9.96	45.33	4.79
85	Fleck's Stock Food	Eugene Secor, Forest City, Ia.	8.79	6.04	12.75	13.03	8.20	51.19	-----
114	Fleck's Stock Food	Cook & Schroder, Reinbeck, Ia.	7.49	5.58	17.71	13.21	9.96	46.05	4.22
238	Fleck's Stock Food	V. E. Stephenson, Lu Verne, Ia	11.79	6.34	13.82	12.61	9.64	45.80	3.99
552	Farmers' Condition Powders	W. H. Braden, Dows City, Ia.	7.30	16.55	21.06	------	24.83	------	5.66
534	Gold Coin Stock Food	Harry Huntsley, Melvin, Ia.	9.31	6.22	12.81	------	13.83	------	9.19
1035	Gold Coin Stock Food	Package Sample	15.76	5.84	13.42	------	13.82	------	10.97
201	Great Western Stock Food	From Charter Oak	11.88	4.45	31.71	10.14	9.04	32.78	5.31
197	Globe Stock Food	------	11.58	6.39	32.75	------	10.94	------	7.43
54	Hess Stock Food	Geo. Smale, Independence, Ia.	6.45	2.31	8.42	8.77	22.55	51.49	16.15
133	Hess Stock Food	E. U. Thomas, Granville, Ia.	8.43	2.77	14.00	8.58	17.67	48.55	12.26
267	Hess Stock Food	W. S. Williams, Jamison, Ia.	12.55	2.75	11.07	8.18	16.56	48.89	10.87
214	Hess Stock Food	Raymond Drug Co., Nashua, Ia	13.98	2.82	9.75	8.06	31.41	33.98	23.59
203	Hess Stock Food	Morrow Drug Co.	11.10	2.88	10.84	8.33	29.66	37.19	21.03
346	Hess Stock Food	W. S. Bear, Decatur, Ia.	9.19	4.44	9.09	8.51	39.12	29.65	27.39
529	Hess Stock Food	J. F. Michael, Seymour, Ia.	9.87	2.90	14.65	8.45	17.42	46.71	11.27
314	Hess Stock Food	J. S. Elerick, Vinton, Ia.	12.78	4.32	15.82	8.61	15.16	43.31	4.05
237	Hess Stock Food	R. Tagge, Durant, Ia.	11.48	3.50	12.21	8.81	18.71	45.29	12.51
329	Hess Stock Food	Bettenmaier Bros., Carroll, Ia.	15.08	4.10	13.64	7.08	22.71	37.39	16.10

PROXIMATE COMPOSITION OF STOCK FOODS AND TONICS—CONTINUED

Lab. Number	Brand	Person Submitting Sample	Water	Ether Extract	Protein	Crude Fiber	Ash	Carbo-hydrate	Common Salt in Ash
965	Hawkeye Stock Food	Sample Package	8.91	5.05	18.95	------	14.40	------	4.14
281	International Stock Food	Bauer & Loughran, Ames, Ia	10.22	5.44	14.13	12.54	17.08	40.59	11.03
268	International Stock Food	N. S. Williams, Jamison, Ia	18.05	2.38	11.90	11.44	18.72	37.51	14.66
56	International Stock Food	W. H. Warburton, Independence, Ia	7.51	4.49	8.50	12.91	16.69	49.90	12.47
135	International Stock Food	E. U. Thomas, Granville, Ia	9.39	3.92	11.46	12.65	16.28	46.30	11.07
224	International Stock Food	Grinwood's Pharmacy, Oxford Junction	------	------	12.36	------	------	------	-----
349	International Stock Food	W. S. Bear, Decatur, Ia	17.20	5.56	11.90	12.56	19.13	33.65	13.53
313	International Stock Food	M. A. Pember, Onawa, Ia	10.63	7.38	10.94	15.30	15.11	40.64	10.53
117	International Stock Food	John Meissner, Reinbeck, Ia	7.25	5.00	15.79	12.96	20.79	38.21	14.95
964	International Stock Food	Sample Package	14.63	6.55	13.03	12.50	19.47	33.82	12.71
966	Iowa Stock Food	Package Sample	6.43	6.71	28.95	------	17.68	------	11.51
207	Lycol Stock Food	Longwell & Waters, Wellman, Ia	10.74	6.29	18.50	11.27	14.32	38.88	9.67
961	Lee's Egg Maker and Chick Grower	Package Sample	11.78	3.11	38.87	------	26.77	------	18.61
348	Lee's Hog Remedy	W. S. Bear, Decatur, Ia	4.00	3.90	4.24	------	64.49	------	28.31
962	Lee's Stock Food	Package Sample	7.33	8.90	29.22	------	16.02	------	12.77
113	Lee's Stock Food	John Meissner, Reinbeck, Ia	5.95	7.14	25.55	------	17.95	------	12.99
257	More's Stock Food	C. N. Knight, Crisp, Ia	5.65	4.79	19.91	10.55	27.23	31.87	10.31
347	Olive Stock Food	W. S. Bear, Decatur, Ia	10.08	8.43	28.64	------	23.00	------	12.21
213	Olive Stock Food	------	18.27	6.89	17.36	------	21.69	------	16.18
528	Pratt's Stock Food	J. F. Michael, Seymour, Ia	9.90	6.29	14.78	11.46	7.00	50.57	3.35
270	Pratt's Stock Food	N. S. Williams, Jamison, Ia	14.19	2.10	15.30	9.97	7.78	50.66	3.86
351	Pratt's Stock Food	W. S. Bear, Decatur, Ia	11.58	6.05	13.92	10.27	6.48	51.70	4.06
123	Pratt's Stock Food	H. W. Avery, Reinbeck, Ia	7.50	4.86	14.73	10.75	7.03	55.13	3.83
223	Prussian Stock Food	Grinwood's Pharmacy, Oxford Junction, Ia	5.84	6.21	14.79	10.23	16.48	46.45	12.97
305	Prussian Stock Food	M. A. Pember, Onawa, Ia	10.60	7.54	14.96	9.70	14.86	42.34	10.97
304	Prussian Stock Food	M. A. Pember, Onawa, Ia	11.93	5.22	14.39	9.56	13.85	45.05	9.55
168	Peerless Stock Food	Anthony Stock Food Co., Marshalltown, Ia	11.78	5.06	20.39	11.91	22.15	28.71	7.92
122	Rex Stock Food	Robinson & Wilson, Reinbeck, Ia	8.18	4.96	15.35	12.79	7.63	51.09	2.80
1036	Rex Stock Food	Package Sample	17.49	5.89	13.16	11.48	7.71	44.27	3.96
533	Rex Stock Food	Detley Bosker, Ruthven, Ia	9.48	5.63	11.17	12.50	8.84	52.38	3.46
536	Raleigh Stock Food	Wm. H. Stoelk, West Side, Ia	10.38	4.91	16.05	16.24	7.88	44.54	4.95

202	Raleigh Stock Food	F. E. Colbert, What Cheer, Ia.	6.26	4.88	16.67	17.00	9.46	45.73	5.44
115	Raven Stock Food	Cook & Shroder, Reinbeck, Ia.	9.79	1.23	14.91	11.21	8.54	54.32	7.02
232	Sherman's Animal Tonic	Sample Package	9.04	9.63	22.31	------	6.66	------	7.74
957	Standard Stock Food	Package Sample	6.96	7.28	27.64	12.04	18.67	27.41	14.16
266	Standard Stock Food	N. S. Williams, Jamison, Ia.	14.30	7.85	23.79	10.60	16.66	26.80	12.86
272	Standard Stock Food	W. S. Bear, Decatur, Ia.	9.67	8.40	24.32	11.69	18.86	27.06	-----
169	Standard Stock Food	Chris Lehman, Slater, Ia.	12.45	7.05	23.80	11.91	16.29	28.50	13.77
274	Stockman's Stock Food	M. L. Woodbridge, Nashua	5.79	3.65	11.43	17.78	17.61	43.74	14.30
134	Universal Stock Food	E. U. Thomas, Granville, Ia.	11.30	2.10	11.72	8.74	25.18	40.96	11.38
565	Watkins' Pabular Stock Food	Miles Woods, Sheldon, Ia.	6.44	8.64	13.16	------	33.26	------	29.29
553	Watkins' Pabular Stock Food	A. N. Osborn, Dallas Center, Ia	7.09	7.82	10.94	------	34.34	------	30.89
150	Winona Stock Food	E. L. Beard, Decorah, Ia.	6.41	8.52	20.47	15.63	20.67	19.27	9.74
350	Winona Stock Food	W. S. Bear, Decatur, Ia.	7.14	11.63	15.99	15.70	29.43	20.11	6.43
959	Wilbur's Seed Meal	Package Sample	9.25	.99	24.48	------	9.16	------	7.02
574	Wilbur's Stock Food	L. T. Spellman, Waverly, Ia.	9.46	5.55	13.38	------	10.84	------	7.50
1031	Wilbur's Stock Food	Package Sample	15.26	5.76	16.58	------	11.70	------	8.99

INVESTIGATIONS BY PROF. L. H. PAMMEL, BOTANIST, IOWA EXPERIMENT STATION, AMES, IA.

THE SALE OF AGRICULTURAL SEEDS SHOULD BE REGULATED BY THE ENACTMENT OF A LAW.

We present to you herewith a statement concerning our investigations concerning the quality of clover, timothy and other seeds sold upon the Iowa market. The facts determined by us are sufficiently important to merit the consideration of the coming session of the Legislature. We present these facts on the invitation of a committee of the Board of Agriculture, consisting of Governor Packard, Professor Curtiss, and the State Dairy Commissioner, Mr. Wright. Our forage crops are so important in the agriculture of Iowa that this question of pure seed merits serious consideration.

AREA DEVOTED TO TIMOTHY AND CLOVER IN IOWA.

In the census of Iowa for the year 1905 we find that the area devoted to the growing of clover was 237,309 acres, and to timothy 3,642,424 acres. In addition to this, large, areas are devoated to the growing of blue-grass and some minor leguminous crops, such as white clover, alsike and alfalfa. A law regulating the sale of agricultural seeds, in regard to their purity, prohibiting adulteration and misbranding, is imperative. Such laws are in force in Canada, Kentucky, Maine and Florida.

THE INTRODUCTION OF BAD WEEDS WITH AGRICULTURAL SEEDS.

Since the areas devoted to the growing of red clover and timothy are frequently renewed, large amounts of seed are annually required for seeding purposes. The farmer pays a large amount of money for this seed, often paying high prices for poor seed. In this seeding there is always a chance that some bad weed may be introduced. In this way new weeds are constantly brought into the State. Recently there was brought into the State with alfalfa, a weed native to Europe and common in the West, known as the knapweed, a very objectionable, spiny weed. In addition to this, burr clover, or alfilaria, a troublesome weed in the West and Europe, has been widely disseminated by means of alfalfa. Throughout the State ribplantain, plantain or buckhorn has been scattered by means of clover seed from the East and from Europe. The Canada thistle has been introduced in a similar way. The clover dodder and common field dodder are reported as menacing the clover crop in different parts of the State. Quack grass, which promises to be one of the most troublesome weeds in northern Iowa, has been introduced with grass seed.

COST OF EXTERMINATING WEEDS INTRODUCED IN BAD SEEDS.

It will cost the farmers of the State a good many thousand dollars to exterminate the Canada thistle, quack grass and rib-plantain introduced carelessly with impure seeds. It has been estimated that it will cost from ten to fifteen dollars per acre to remove these weeds from the farms of Iowa. The financial loss, therefore, to the farmers of the State will be enormous. Can we afford to introduce these weeds with impure seeds? It has been estimated that samples of clover seed containing 1 per cent of weed seeds as impurities contain about one thousand weed seeds per pound. That in another case where the per cent was 2½, the number was 27,600 weed seeds per pound. Mr. Pieters says: "If fifteen pounds were sown per acre, the farmer plants about 414,000 seeds of weeds, which have an equal chance with the crops in which they grow." From our investigation, we may cite what was found in one sample of red clover. The percentage of impurities was as follows: Canada thistle, .707; bull thistle, 1.04; timothy, 1.267; field sorrel, .75; curled dock, 2.05; yellow foxtail, 3.704; green foxtail, 1.25; other weeds, 2.02. The farmer who sent this sample of clover seed would have thoroughly sown his field of ten acres with Canada thistle at the rate of 10,000 plants per acre, 15,000 bull thistle, and 30,000 common curled dock; in addition, foxtail and other weed seeds to the amount of 2,000,000 per acre. It would have kept the farmer busy for three years exterminating these bad weeds. We advised the farmer not to sow this seed. The farmers of the county in which this seed was offered for sale refused to buy the same. In some Iowa grown clover seed, some years ago, Mr. Stewart, in the writer's laboratory, found impurities to the amount of 3 to 67 per cent weed seed. Fortunately, most of these impurities were weeds which were common to Iowa.

IMPURITIES IN CLOVER SEED.

Rib-grass was found seven times. The Canada thistle and common dodder did not occur in the Iowa grass seed. In our own recent investigation, out of 238 samples of red clover seed examined, 155 samples contained timothy, 137 contained dirt and sand, 128 yellow foxtail, 125 contained green foxtail, 111 Rugel's plaintain, 105 crab or quack grass, 61 rough pig-weed, 44 lamb's quarter, 35 bracted plantain, 27 old witch grass, 27 dooryard plantain, 21 Canada thistle, 20 barnyard grass, 20 cockle, 20 smooth crab-grass, 15 bull thistle, 10 dodder, 7 wild carrot, 7 starry compion, 4 blue vervain, 4 hoary vervain, 4 spurge, 3 English charlock, 3 peppergrass, 3 ragweed, 2 cowherd, 2 black bindweed, 1 chickory, 1 couch grass, 1 water hemp, 1 yellow trefoil.

PER CENT OF IMPURITIES.

The percentage of impurities of these 238 samples varied greatly. In a few cases there were no impurities, but in other cases the impurities amounted to 18.606 per cent. The average for red clover was 1.93 per cent. The sample of alfalfa showed a better state of affairs. The highest was 2.417 per cent, with an average impurity of .838 per cent. Alsike varied from .152 to 7.568 per cent, with an average of 3.437 per cent; timothy varied from .073 to 6.97 per cent. This shows that the farmer pays 26 cents for impurities in 100 pounds of red clover, 12 cents for impurities in alfalfa, 51 cents for impurities in alsike, and 23 cents for impurities in timothy. The farmer does not want to pay a high price for weed seeds, of which he has enough.

ADULTERATIONS.

When the farmer asks for alfalfa seed, he does not want the substitute, burr clover or sweet clover, which are frequently mixed with low-grade alfalfa seed, as indicated by the extensive investigations of the Kansas Agricultural Experiment Station. These weeds have most objectionable qualities, and the farmer cannot afford to introduce these plants. Canadian blue-grass is substituted for blue-grass and other green substitutes are frequent; mustard is sold for rape, etc.

VIABILITY OF SEEDS.

The farmer is interested not only in obtaining pure seeds, but he also wants seeds that are capable of germination. The following table, taken from Mr. Pieter's report, shows the condition of a few different samples:

Five of the samples of red clover in the following table were fairly good seed, but the price was not always proportionate to the real value. Samples 2 and 7, though inferior seed, were really the most expensive, while for sample 6 less was paid per pound of good seed than for any of the others. Most of these samples were purchased in the same place, and two of them, numbers 1 and 3, from the same dealer. They illustrate how little local dealers regulate prices according to the real value of the seed.

TABLE 1.—Comparison of market price of clover seed with price actually paid for the good seed:

Sample No.	Market Price Per Bu.	Per Cent Good Seed.	No. Lbs. of Good Seed.	Price Paid Per Bu. Good Seed.
1............	$5.50	93	55.8	$5.58
2............	5.25	76.2	45.72	6.90
3............	5.00	92	55.2	5.40
4............	4.75	93	55.8	5.10
5............	4.75	80.1	48	5.94
6............	4.00	87.3	52.38	4.59
7............	3.50	46.2	27.72	7.56

In this table the cost of the seed has been reduced to cost per bushel of good seed. A consideration of the table shows that neither the highest nor the lowest priced sample was the cheapest. The lowest priced lot, No. 7, cost more per bushel of good seed than any other, while lot No. 6 was the best one to buy because it was sold for the lowest price per bushel of good seed. If this lot had contained the seeds of injurious weeds, that fact would have to be taken into consideration when judging of its value. The presence of dodder, even in small amounts, should condemn any sample of clover or alfalfa, no matter how good it may otherwise be, and the presence of more than 1 per cent of weed seeds will take far more than 1 per cent from the value of the sample. The important point is that the value of clover seed should be judged, not by the price per bushel, but by its price per pound or bushel of pure and germinable seed.

We have found in our own investigation that seeds sent to us last spring from various parts of the State showed a very low degree of vitality.

COMPARATIVE VALUE OF PLUMP SEEDS IN SPRING AND FALL.

	March, 1906.	November, 1906.
Alfalfa	56.91	15
Alsike clover	66.34	35.6
Red clover	79.8	48.2

COMPARATIVE VITALITY OF PLUMP AND SHRUNKEN SEEDS.

March, 1906—	Plump.	Shrunken.
Alfalfa	56.91	24.16
Alsike	66.34	28.92
Red clover	79.8	30.9
November, 1906—	Plump.	Shrunken.
Alfalfa	20	10
Alsike	35.6	10.8
Red clover	48.6	25.2

This table, made up from the germination studies of thirty-five samples of red clover seed, shows that 20.2 per cent of the seed would not germinate under the best of conditions—alfalfa, still greater; and the same was true of alsike. The farmer paid $1.30 too much for every bushel of clover seed purchased where it had such a low vitality. Good clover seed should germinate from 93 to 95 per cent, and the average test shows only 79.8 per cent. The shrunken seed was immature, and also showed a low vitality. Much of the clover seed tested by us was undoubtedly adulterated. The shrunken seed is frequently mixed with old seed. An honest dealer would not mix his old seed with the new, but there are unscrupulous men in this line of business, as in others. I have known of seed merchants buying old millet and old clover seed.

The farmers of Iowa are, however, paying for poor seed. We may ask, should not the farmers have some legislation to remedy this state of affairs? We need better seed. The farmer does no want to introduce the Canada thistle, dodder, quack grass, ribplantain, in clover seed, and he wants his seed to germinate.

PROF. L. H. PAMMEL.

*LAWS.

Concentrated Commercial Feeding-Stuffs, Condimental Stock Foods, and Agricultural Seeds.

EFFECTIVE JULY 4, 1907.

SECTION 1. Every lot in bulk, barrel, bag, pail, parcel or package of concentrated commercial feeding-stuffs as defined in section three (3) of this act; and every parcel, package or lot of agricultural seeds as defined in section nine (9) of this act, and containing one pound or more, offered or exposed for sale in the State of Iowa, for use within this State, shall have affixed thereto, in a conspicuous place on the outside thereof, distinctly printed in the English language, in legible type not smaller than eight-point heavy gothic caps, or plainly written, a statement certifying:

1. In case of concentrated commercial feeding-stuffs:

First—The number of net pounds of feeding-stuffs in the package.

Second—The name, brand, or trademark under which the article is sold.

Third—The name and address of the manufacturer, importer, dealer or agent.

Fourth—The place of manufacture.

Fifth—Except in the case of condimental stock food; patented, proprietary or trademarked stock and poultry foods, claimed to possess medicinal or nutritive properties, or both, the chemical analysis of the feeding-stuffs, stating the percentages of crude protein, crude fat, and crude fiber, allowing one per cent of nitrogen to equal six and twenty-five one hundredths per cent of protein, all three constituents to be determined by the latest methods adopted by the Association of Official Agricultural Chemists of the United States.

2. In the case of agricultural seeds:

First—The name of the seed.

Second—Full name and address of the seedsman, importer, dealer or agent.

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*In lieu of bill as originally drawn by Commiteee we publish the law as passed by the Thirty-second General Assembly.

Third—A statement of the purity of the seed contained, specifying the kind and percentage of the impurities as defined in sections eleven (11) and twelve (12) hereof, provided that said seeds are below the standards fixed in this act.

Fourth—Locality were said seed was grown, when known.

Sec. 2. Every barrel, bag, pail, parcel or package of concentrated commercial feeding-stuffs, as defined in section three (3) of this act, and every feed intended for domestic animals that is compounded from two or more substances, in addition to the requirements of section one (1), shall have affixed thereto, in a conspicuous place on the outside thereof, a statement in the manner and form prescribed in section one (1), giving the true and correct names of all the ingredients of which it is composed. Except condimental stock food; patented, proprietary or trademarked stock or poultry foods, claimed to possess medicinal or nutritive properties, or both; and these shall be labeled or branded so as not to deceive or mislead the purchaser in any way, and the contents of any such package shall not be substituted in whole or in part for any other contents.

"Any statement, design or device upon the label or package regarding the substances contained therein, shall be true and correct, and any claim made for the feeding, condimental, tonic or medicinal value shall not be false or misleading in any particular.

"The name and percentage of any deleterious or poisonous ingredient or ingredients shall be plainly stated upon the outside of the package or container."

"The name and percentage of the diluent or diluents, or bases, shall be plainly stated on the outside of the package or container."

Sec. 3. The term, concentrated commercial feeding stuffs, as used in this act, shall include alfalfa meals and feeds; dried beet refuse; ground beef or fish scraps; bean meals; dried blood; brewers' grains, both wet and dry; cerealine feeds; cocoanut meals; corn feeds; corn and oat feeds; corn, oat and barley feeds; compounds under the name of corn and cob meals; corn bran; clover meal; cotton-seed meal and feeds; germ feeds; distillers' grains; gluten meals; gluten feeds; hominy feeds; linseed meals; malt refuse; malt sprouts; meat meals; meat and bone meals; mixed feeds of all kinds; oil meals of all kinds; oat feeds; oat bran; oat flour; oat middlings; oat shorts; pea meals; poultry foods; rice bran; rice meal; rice polish; rye bran, rye middlings; rye shorts; starch feeds and starch factory by-products; tankage and packing house by-products; wheat bran; wheat middlings; wheat shorts; and all low grade wheat flour; and all materials of similar nature used for domestic animals; also condimental stock food; patented proprietary or trademarked stock or poultry feeds, claimed to possess medicinal or nutritive properties or both; and all other materials intended for feeding to domestic animals. But it shall not include: Hay; straw; whole seeds; unmixed meals made from the entire grains of wheat, rye, barley, oats, Indian corn, buckwheat, and broomcorn; nor wheat flours nor other flours fit for human consumption.

Sec. 4. Before any concentrated commercial feeding-stuffs, as defined in section three (3) of this act, is offered or exposed for sale, the importer, manufacturer, person or party who causes it to be sold or offered for sale within the State of Iowa, for use within this State, for each and every feeding-stuff bearing a distinguishing name or trademark, shall file with the State Food and Dairy Commissioner a certified copy of the statement named in section one (1) of this act, and shall also deposit with the said State Food and Dairy Commissioner a sealed glass jar or bottle containing not less than one pound of the feeding-stuff to be sold or offered for sale, accompanied by an affidavit that it is a fair average sample thereof and corresponds within reasonable limits to the feeding-stuff which it represents.

Sec. 5. Before any manufacturer, importer, dealer or agent shall offer or expose for sale in this State any of the concentrated commercial feeding-stuffs defined in section three (3) of this act, he shall pay to the State Food and Dairy Commissioner an inspection fee of ten cents per ton for each ton of such concentrated feeding-stuffs sold or offered for sale in the State of Iowa, for use within this State; (except that every manufacturer, importer, dealer or agent for any condimental, patented, proprietary or trademarked stock or poultry foods, or both, shall pay to the State Food and Dairy Commissioner, on or before the fifteenth day of July of each year, a license fee of one hundred dollars ($100.00) in lieu of such inspection fee. Whenever the manufacturer or importer of such foods shall have paid the fee herein required, no other person or agent of such manufacturer or importer shall be required to pay such license fee); and shall affix to each lot shipped in bulk, and to each bag, barrel or package of such concentrated commercial feeding-stuffs, a tag, to be furnished by the said State Food and Dairy Commissioner, stating that all charges specified in this section have been paid; provided that the inspection fee herein required shall not apply to unadulterated wheat, rye and buckwheat bran, nor wheat, rye and buckwheat middlings, nor to wheat, rye and buckwheat shorts manufactured in this State. The said State Food and Dairy Commissioner is hereby empowered to prescribe the form of such tag and adopt such regulations as may be necessary for the enforcement of this act. Tags for use upon concentrated commercial feeding-stuffs shall be issued in denominations suitable for use with twenty-five, fifty and one hundred pounds net, except as hereinafter provided. Provided, that any dealer who sells at one time to any other person one ton or more of concentrated commercial feeding-stuffs shall be held to have complied with the provisions of this section if he delivers to the purchaser the tax tags herein required, even though the may not be attached to the various packages.

Sec. 6. The State Food and Dairy Commissioner shall cause to be made analyses of all concentrated commercial feeding-stuffs and agricultural seeds sold or offered for sale in this State. Said State Food and Dairy Commissioner is hereby authorized, in person or by deputy, to take for analysis a sample from any lot or package of concentrated commercial feeding-stuffs in this State, not exceeding two pounds in weight; and in case of agricultural seeds, a sample not exceeding four ounces in weight; but said sample shall be drawn or taken in the presence of the party or parties in interest, or their representative, and shall be taken from a parcel, lot or number of parcels which shall not be less than five per cent of the whole lot inspected and shall be thoroughly mixed and divided into two samples and placed in glass or metal vessels carefully sealed and a label placed on each, stating the name or brand of the feeding-stuff, agricultural seeds or material sampled, the name of the party from whose stock the sample is drawn, and the date and place of taking such sample, and said label shall be signed by the said State Food and Dairy Commissioner, or his authorized agent; or said sample may be taken in the presence of two disinterested witnesses. One of said duplicate samples shall be left on the premises of the party whose stock was sampled and the other retained by the State Food and Dairy Commissioner, for analysis and comparison with the certified statements required by sections one (1) and four (4) of this act. The result of the analysis of the sample, together with additional information, shall be published from time to time in bulletins issued by the State Food and Dairy Commissioner upon approval of the Executive Council.

Sec. 7. Any person purchasing any concentrated commercial feeding-stuffs or agricultural seeds in this State, for his own use, may submit fair samples of said feeding-stuffs or seeds to the State Food and Dairy Commisioner, who, upon receipt of an analysis fee of fifty cents (50c) for each sample of agricultural seeds and one dollar for each sample of concentrated commercial feeding-stuff, shall cause an analysis of the same to be made.

Sec. 8. No person shall sell in ground form, wheat or rye screenings containing cockle or other poisonous or deleterious substances.

Sec. 9. The term, agricultural seeds, as used in this act, shall include the seeds of the red clover, white clover, alsike clover, alfalfa, Kentucky blue-grass, timothy, brome grass, orchard grass, red top, meadow fescue, oat grass, rye grass, and other grasses and forage plants, flax, rape and cereals.

Sec. 10. No person shall sell, offer, or expose for sale, or distribution, in this State, for the purpose of seeding, any of the agricultural seeds as defined in section nine (9) of this act, unless the said seeds are free from the seeds of the following weeds: Wild mustard or charlock (Brassica sinapistrum), quack grass (Agropyron repens), Canada thistle (Cnicus arvensis), wild oats (Avena fatua), clover and alfalfa dodder (Cuscuta epithymum), field dodder (Cuscuta arvensis), and corn cockle (Lychnic githago).

Sec. 11. The seeds of the following weeds shall be considered as impurities in the agricultural seeds, as defined in section nine (9) of this act, sold, offered, or exposed for sale, within the State for the purpose of seeding: White cockle (Lychnis vespertina), nightflowering catchfly (Silene noctiflora), curled dock (Rumex crispus), smooth dock (Rumex altissimus), sheep-sorrel (Rumex acetosella), yellow trefoil (Medicago lupulina), burr clover (Medicago denticulata), sweet clover (Melilotus alba and officinalis), black mustard (Brassica nigra), plantain, buckhorn (Plantago lanceolata), bracted plantain (Plantago aristata), bindweed (Convolvulus sepium), smooth crab-grass (Panicum glabrum), common chickweed (Stellaria media). When such impurities or any of them are present in quantity exceeding a total of two per cent of the weight of said agricultural seeds, the aproximate percentage of each shall be plainly indicated in statement specified in section one (1) of this act.

Sec. 12. Sand, dirt, chaff and foreign substances and seeds other than those specified in sections thirteen (13) and fourteen (14), or broken seed and seed not capable of germinating, shall be considered impurities when present in agricultural seeds sold, offered, or exposed for sale, in this State, for the purpose of seeding, and when such impurities, or any of them, are present in quantity exceeding the standards of purity and viability authorized in section sixteen (16) of this act, the name and approximate percentage of each shall be plainly indicated in the statement specified in section one (1) of this act.

Sec. 13. For the purposes of this act, seeds shall be deemed to be mixed or adulterated:

First. When orchard-grass (Dactylis glomerata) seed contain ten per cent or more by weight of meadow fescue (Festuca elatior pratensis) seed, or Italian rye-glass (Lolium italicum) seed, or English rye-grass (Lolium perenne) seed.

Second. When blue-grass or Kentucky blue-grass (poa pratensis) seed contains five per cent or more by weight of Canadian blue grass (Poa compressa) seed, redtop chaff, redtop (Agrostis albo) seed or any other seed or foreign substance.

Third. When red clover (Trifolium pratense), mammoth red clover (Trifolium pratense var.), or alfalfa (Medicago sativa), contains five per cent or more by weight of yellow trefoil (Medicago lupulina), or sweet clover (Melilotus alba and M. officinalis) seed or burr clover (Medicago denticulata) seed.

Fourth. When rape (Brassica rapa) contains five per cent or more of common mustard (Brassica sinapistrum) or black mustard (B. nigra).

Sec. 14. For the purposes of this act, seed shall be deemed to be misbranded:

First. When meadow fescue (Festuca elatior pratensis), English rye-grass (Lolium perenne) or Italian rye-grass (Lolium italicum) is labeled or sold under the name of orchard-grass (Dactylis glomerata) seed.

Second. When Canadian blue-grass (Poa compressa) seed, redtop (Agrostis alba) seed, or any other seed not blue-grass seed, is sold under the name of Kentucky blue-grass or blue-grass (Poa pratensis) seed.

Third. When yellow trefoil (Medicago lupulina), burr clover (Medicago denticulata), or sweet clover (Melilotus alba) is sold under the name of clover, June clover, red clover (Trifolium pratense), medium red clover, small red clover, mammoth red clover, sappling clover, peavine clover (T. pratense var.), or alfalfa (Medicago sativa) seed.

Fourth. When the seeds are not true to the name under which they are sold.

Sec. 15. The provisions concerning agricultural seeds contained in this act shall not apply to:

First. Any person or persons growing or selling seeds for food purposes only, or having such seeds in possession for sale for such purposes.

Second. Any person selling seeds direct to merchants, to be cleaned or graded before being offered for sale for the purpose of seeding. This shall not, however, exempt the seller from the restrictions of Section Ten (10) of this act.

Third. Seed that is held in storage for the purpose of being re-cleaned, and which has not been offered, exposed or held in possession of or for sale for the purpose of seeding.

Fourth. Seed marked "not absolutely clean," and held or sold for export outside the State only.

Fifth. The sale of seed that is grown, sold and delivered by any farmer on his own premises for seeding by the purchaser himself, unless the purchaser of said seeds obtains from the seller at the time of the sale thereof a certificate that the said seed is supplied to the purchaser subject to the provisions of this act.

Sixth. Mixtures of seeds for lawn or pasture purposes. This shall not, however, exempt the seller of such mixtures of seeds from the restrictions of sections ten (10) and eleven (11) of this act.

Sec. 16. The following standards of purity (meaning freedom from weed seeds or other seeds) and viability are hereby fixed:

STANDARD OF PURITY AND VIABILITY OF AGRICULTURAL SEEDS

NAME OF SEED	Per cent of Purity	Per cent of germinable seeds
Alfalfa (Medicago sativa)	96	80
Barley	98	90
Blue-grass, Canadian (Poa compressa)	90	45
Blue-grass, Kentucky (Poa pratensis)	80	45
Brome, awnless (Bromus inermis)	90	75
Clover, alsike (Trifolium hybridum)	90	75
Buckwheat	96	90
Clover, crimson (Trifolium incarnatum)	98	85
Clover red (Trifoium pratense)	92	80
Clover, white (Trifolium repens)	90	75
Corn, field (Zea mays)	99	94
Corn, sweet	99	75
Fescue, meadow (Fescuta pratensis)	95	85
Flax (Linum usitassimum)	96	89
Millet, common (Setaria italica)	90	85
Millet, hog (Panicum miliaceum)	90	85
Millet, pearl (Penisetum typhoideum)	99	65
Oats (Avena sativa)	98	90
Oat grass, tall (Arrhena therum avenaceum)	72	70
Orchard-grass (Dactylis glomerata)	70	70
Rape (Brassica rapa)	99	90
Redtop (Agrostis albo)	90	70
Rye (Secala cereale)	98	90
Rye-grass, perennial (Lolium perenne)	96	90

NAME OF SEED	Per cent of Purity	Per cent of germinable seeds
Rye-grass, Italian (Lolium italicum)	95	80
Sorghum (Andropogon sorghum)	96	80
Sorghum, for fodder	90	60
Timothy (Phleum pratense)	96	85
Wheat (Triticum)	98	90

SEC. 17. It is hereby made the duty of the State Food and Dairy Commissioner to enforce the provisions of this act. The inspectors, assistants and chemists appointed by the State Food and Dairy Commissioner shall perform the same duties and have the same authority under this act as are prescribed by chapter one hundred and sixty-six (166), laws of the Thirty-first General Assembly, and the said State Food and Dairy Commissioner may appoint, with the approval of the Executive Council, such analysts and chemists as may be necessary to carry out the provisions of this act.

SEC. 18. Whoever sells, offers or exposes for sale any of the seeds specified in sections thirteen (13) and fourteen (14) of this act which are mixed, adulterated or misbranded, or any agricultural seeds which do not comply with sections ten (10), eleven (11) and twelve (12) of this act, or who shall counterfeit or use a counterfeit of any of the tags prescribed by this act; or who shall prevent or attempt to prevent any inspector in the discharge of his duty from collecting samples or who shall violate any of the provisions of this act shall be guilty of a misdemeanor, and upon conviction, shall be fined not more than one hundred dollars ($100) and costs of prosecution; provided, that no one shall be convicted for violation of the provisions of section ten (10) of this act if he is able to show that the weed seeds named in section ten (10) are present in quantities not more than one in ten thousand, and that due diligence has been used to find and remove said seeds.

SEC. 19. There is hereby appropriated, for the purpose of enforcing the provisions of this act, a sum not exceeding three thousand dollars ($3,000) annually. Such expense shall be paid by warrant of the State Auditor upon bills filed by the State Food and Dairy Commissioner with the Executive Council and approved by them. All fees collected under the provisions of this act shall be paid into the State treasury.

EXPLANATORY NOTES.

BY H. R. WRIGHT, STATE DAIRY AND FOOD COMMISSIONER.

STOCK FOODS.

(1) Section 3 of the act defines "concentrated commercial feeding stuffs" and includes in the definition "also condimental stock food; patented proprietary or trademarked stock or poultry feeds, claimed to possess medicinal or nutritive properties or both," but the feeds embraced in this part of the definition are treated differently throughout the law.

(2) Labels required on feeding stuffs. Sections 1 and 2.

	Example—
(a) Number of net pounds in the package.	**100 POUNDS.**
(b) Name or brand of the article.	**MIXED BARLEY FEED.**
(c) Name and address of manufacturer importer or dealer.	**SMITH & CO.**
(d) Place of manufacture.	**ST. LOUIS.**
(e) Statement of percentages of crude protein, crude fiber, crude fat.	**PROTEIN 14%, FAT 2.5%, FIBER 10%.**
(f) Names of all ingredients.	**BARLEY, ALFALFA, OAT HULLS, CORN.**

(3) Statements required upon condimental stock foods comprise the items (a), (b), (c) and (d) above; also a statement of the name and percentage of the diluents used; for example such a statement might be: **DILUENTS USED, 40% OIL MEAL, 20% BRAN.**

(4) Section 1 provides that the statements required shall be "distinctly printed or written," "in legible type not smaller than eight-point heavy gothic caps," and that it be "a statement" attached "in a conspicuous place." This department will hold that the first two phrases mean that the statement is to be so printed that it may be easily and plainly read; and that the last two phrases mean that the various items required may not be scattered over the package or otherwise disassociated from one another to the extent that the buyer will with difficulty find the information required to be given.

(5) Section 4 requires that each manufacturer shall file with the Food and Dairy Commissioner a certified copy of the statement required to be attached to his feeding stuff, and also a sample of each brand of his concentrated commercial feeding stuffs, together with the proper affidavit.

(6) Upon feeding-stuffs other than condimental stock foods a tax of ten cents a ton must be paid and a tag stating that the tax has been paid must be attached to the bags or packages. These tags are to be furnished by the Food and Dairy Commissioner, in accordance with the provisions of section 5. Blank form for such statements and affidavits will be furnished on request.

(7) Local dealers are liable for the sale of feeding-stuffs not bearing the statements and tax tag required by the law and should insist that feeding-stuffs sent them for sale be properly labeled and tagged.

(8) This department can not undertake analyses for manufacturers or dealers, but is required to make analyses for those who purchase for their own use, and samples and applications for such analyses should be accompanied by a copy of the statement attached to the feeding-stuff. Section 7 requires payment of a fee of one dollar for such analyses.

(9) Tags will be issued in two forms:

(a) Regular shipping tag form.
(b) Gummed back paper form, suitable for attachment to such shipping tags as the manufacturer may be using.

The above forms of tags will be issued in denominations suitable for use with 25, 50 and 100 pounds net. A tag suitable for use with ton lots will also be issued, to be used with sales made direct to the consumer under the proviso fund in the last sentence of section 5.

CONDIMENTAL STOCK FOODS.

The definition of these foods is found in section 3. A license of $100 a year is required from each manufacturer or importer of such foods, but if this license is not paid by the manufacturer or importer it may be collected from the dealer or agent for such food. Dealers and agents should therefore make sure that the license has been paid by the manufacturer before attempting to sell the same inside this State.

(10) The statement set forth in paragraph 3 is required upon packages of articles of this character. See also paragraphs 4 and 5 preceding.

AGRICULTURAL SEEDS.

The definition of agricultural seeds is found in section 9 and a list of the seeds affected by this act is found, with percentages of purity and viability, in section 16.

(11) The sale of agricultural seeds containing any of the weed seeds mentioned in section 10 is absolutely prohibited, and seedsmen will be held responsible for sale of seeds for seeding purposes which contain any of the mentioned weed seeds.

(12) The sale of agricultural seeds which may contain an aggregate of not more than two per cent by weight of the weed seeds mentioned in section 11 is not interfered with; but if more than two per cent of such impurities is present, the approximate percentage of each of such seeds must be given in the statement required in section 1 of the act.

(13) Section 12 defines impurities in seeds. Agricultural seeds sold without statement of impurities are thereby guaranteed to be up to the standards of purity and viability established in section 16. Seeds not up to these standards may be sold only when the statement required in section 1 includes the name and percentages of impurities mentioned in section 12.

(14) The statement required upon seeds by section 1 is as follows:

	Example—
(a) Name of seed.	**CLOVER, RED.**
(b) Name and address of seedsman.	**SMITH & CO., DES MOINES.**
(c) Statement of purity, etc., in accordance with sections 11 and 12.	**IMPURITIES—3% YELLOW TREFOIL, 7% UNNAMED SEEDS, 12% CLOVER NON-GERMINABLE.**
(d) Place where grown.	**IOWA GROWN.**

(15) This department cannot undertake analysis or investigations of seeds for dealers, but is required to make analysis for those who purchase for their own use, and samples and applications for such investigations must be accompanied by a copy of the statement of the seedsman attached to the packages. Section 7 requires payment of a fee of fifty cents.

PART VI

PROCEEDINGS

OF THE

Annual Meeting of the Iowa Swine Breeders' Association

1906

BY C. C. CARLIN, SECRETARY.

OFFICERS.*

WM. D. McTAVISH, President	*Coggon*
JOHN M. COX, Jr., Vice-President	*Harlan*
J. A. BENSON, Vice-President	*Primghar*
C. C. CARLIN, Secretary and Treasurer	*Des Moines*

The annual summer meeting of the Iowa Swine Breeders' Association took place at Des Moines on Tuesday, June 5th, the program taking up the entire afternoon and evening. President McTavish opened the afternoon session with the following address:

PRESIDENT'S ADDRESS.

WM. D. M'TAVISH, COGGON, IOWA.

"I want to say to you that the importance of this Association to the State of Iowa is increasing year by year. The United States, I understand, produces one-fifth of the agricultural products of the world. In the pork products of the world she has no second. In the pork products of the United States, Iowa produces practicaly twice the number of hogs of any other State in the Union. Illinois follows us and after Illinois the number drops off very rapidly so that Iowa is the greatest swine producing State in the world. She produces more hogs to the square mile than any other State in the world. There is more wealth produced from the rearing of swine in the State of Iowa than from any other product she produces. Therefore, gentlemen, as exponents of this great industry, you as an organization are here to protect not only your business, but the business of a great State and one of the greatest wealth producing industries she has.

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* Election of officers occurs during State Fair week. See directory in last part of Year Book for latest elected officers.

"The object of this Association has been to preserve the interest of this great industry and endeavor to make its conditions better and forward its interests in every line. This Association has, from the time of my earliest connection with it, kept that steadily in view and adhered to those principles and it will always do so and it is becoming recognized by the farmers of Iowa as a great help to them and they are realizing more each year the benefits accruing from the efforts of this Swine Breeders' Association.

"We have on our program many topics that are intended to shed further light on our industry and to be an aid to beginners and a help to the older ones in the business."

At the completion of President McTavish's address Secretary Carlin read the paper of W. Z. Swallow, of Waukee, Iowa, on the subject of "Forty Years a Swine Breeder."

FORTY YEARS A SWINE BREEDER.

W. Z. SWALLOW, WAUKEE, IA.

When I was in the army in Arkansas we had to catch the razor-back hogs, were not allowed to shoot them, and I said to the boys that if I ever raised a hog I would raise a good one. There were more Berkshires than Poland Chinas in our part of the country at that time, in 1864 and 1865. We were raising at that time a coarse hog, heavy eared and spotted. I got my first lesson on medium type hogs from old Mr. Sam Clark. He said you want a pig that you can cut his head off and cut his legs off and put him into a box he will fit in. Then I began to study it up and take to the more medium type. They were a whole lot different from what they are now. They were coarse animals, with heavy ears that came right down to the end of the nose sometimes. Once in awhile one had a sandy spot, but these sandy spots when they would shed would shed white. I bought my first Poland China hogs from Magie, of Oxford, Ohio, and the second bunch from A. C. Moore, of Canton, Illinios, in 1864. The hogs were called by the names of Magie hog and Moore hog. There was quite a difference between the type of the Magie hog and the Moore hog. The Moore hog was more flat, with coarse, rough hair and spotted. Sometimes called it the pumpkin seed hog. The next ones I got of W. W. Ellsworth, of Woodstock, Ill., and they were a more finely finished hog. I paid from $25 to $35 and even as high as $50. Our trade run from $10 to $12 and $15. I think it was somewhere along in the seventies that I sold a pig at a district fair for $50, the first pig I ever sold for $50. One fellow said he was going to beat me. I had the best pig, but he beat me and bought my pig and took it to St. Louis, where he won a ribbon on it. I was put on as judge at the Iowa State Fair at Keokuk, about 1877, and then I began to learn more about the pigs. Then I think another place where I made as much improvement as anywhere was watching the papers, and when Tom Corwin II. came out I watched that type of hog. He had good style and finish, was not so coarse. And then I let the coarse, rough fellows go and took more to the medium sized hog. There was more improvement between the time of Tom Corwin II. and Ideal Black U. S. than in any other period. After Tom Corwin II. came in old U. S. and so on down to King Corwin. I don't know why they don't advertise families of sows, but I think that comes in because as a rule we aim to get our sows as near all of one type whether they belong to the same family or not. We do not want one sow with a fine bone and then a big coarse one. I watched that pretty closely and no one that followed that course got along very well. They used to bring them to the fair with the ears away over the eyes so you could not drive them anywhere. Old Dr. Grimmel brought them down. I watched that style of hog of Tom Corwin II. and old U. S. and then listened to the Ohio breeders when they came to our fairs in the early day, and that is where I kept getting my information. The most important point is to watch and pick your good male pig. A few dollars on a good male pig is nothing. A good male pig is half your herd and you want to see to that. The type of hog the public demands is the kind of hog you want. If you watch that and tend to it you will climb up the ladder all the time. Western judges go too much by the coarseness which the pork packers don't demand. We have to come down just the same as in cattle. Nice, blocky, compact steers bring the most money in the market, and I think it is the same with a hog. You take the early maturing animal and you can feed them up most any time and it is always ready for market. When cholera comes along, put them on the market and they will sell. If you have the coarse, lean sort you can't sell them. A good foot means a good hard bone. If you get a pig that stands straight on his toes and with the legs, as we say, on the corners, you will have a wide body and a good hog. There has been a big improvement in feet since 1886. That was when Iowa Champion came out. T. H. Reveal taught me that lesson. We were looking around over the pigs and I asked him to show me the best hog. He got into the pen and pressed the dew claws close to the leg to see if the pastern was short, saying if the pastern was short it would be a good foot. When you have a good foot you always have strong bone and good shape. I picked up all these little things at the State Fairs. I always made it a point whenever there was a new family of hogs coming out that looked like it was reasonable that it would get to the front, to buy some of that stock before it got clear out of reason. Black U. S. was popular because he was more of the medium type and not so big and coarse, and the Black U. S. family had better feet and legs as a rule. I bought him and brought him here just to make that change and it did a lot of good to get him. It put better feet and legs on the pigs, gave a little more finish than the other big, coarse animals I had, and it made a great improvement. The people were looking after that kind and that was the kind to get. I could sell a Black U. S. for $50 easier than an ordinary pig for $15 because breeders were looking for that type. The size was plenty and the quality was good, and all my females now trace back to him. Take a hog that has ears set wide apart and he will have a wide forehead and as a rule a short nose and if his legs are set wide apart you will always have a great back, which means a well sprung rib and a great loin. That has been my experience, and that is where Iowa Champion came in ahead of all of them. He was of that makeup. I had the first prize male here at the Iowa State Fair in 1879. That was the first Iowa fair held in Des Moines. It was Young Sampson, bred by Ellsworth, of Illinois. In 1884 I won first and sweepstakes on Dandy Jim, a hog that Shepherd & Alexander bred. He was one of that blocky type. In 1886 I bought Iowa Champion. He was bred and raised by McClung. I showed him as a yearling and he won first and sweepstakes at the Iowa State Fair, and the same year first at the Nebraska Fair. In 1888 I showed him again at the Iowa State Fair as a two-year-old, and he won first and sweepstakes; and was killed shortly afterward. In 1889 I showed Iowa Champion II. and won first and sweepstakes on him. Then I got King Tecumseh II. and Ideal Black U. S. I got King Tecumseh II. in 1890 and in 1892 old Black U. S. and in 1895 Ideal Black U. S. I got old King Corwin in 1894, and Pioneer Chief followed.

I don't know as feeding amounts to as much as keeping your lots in shape, using lots of lime around the pens and sleeping pens. Whitewash the fences and raise a green crop every year on the lots. I think oats and rape are the best things to raise. It is a quick growth, and when your oats are gone your rape is coming on. I think that is one thing that has kept us from having cholera any oftener. We always haul sand and gravel for the pigs the same as for chickens. They will leave corn to come and eat the sand if they have not had it for a while. It is something they need and relish, and in the summer time it makes the nicest, coolest bed for them of anything you can find. Throw lime around in your sleeping departments. It is good for them and the dust will not hurt the pigs. It helps appearances as well as helping the hogs.

In the early days we fed heavier with corn. At first we ground corn and oats and fed quite a bit of that. We did not buy feed so much as we do now. Later on we shut down on corn and oats some. We changed mostly because we thought it was a little easier feeding. It was not so much trouble to feed shorts as to grind feed. When I was feeding shorts I aways thought it better to feed dry corn in place of soaked corn. You get better bone and muscle with shorts. The main thing is exercise. Pigs should have plenty of exercise and a good dry place to sleep. They will always take exercise if they have a chance and plent of room. Don't feed them so heavy but what they would like to have just a little bit more. I never have had much trouble with rooting and never ring my pigs. If you keep a hog healthy and in good shape it will not root. I think rings hurt them and make them cross. If you starve them down and don't feed them properly they will root more or less. We always raise two sets of pigs each year from every sow. Lots of people object to that. If we ever kept an old brood sow she always raised two litters every year. Do not breed sows until they are a year old. We get our best brood sows from fall gilts coming near a year old before breeding.

I sold Ideal Black U. S. for a thousand dollars cash, the biggest price I ever got for a hog and the biggest price ever paid in Iowa up to that time. The sale was a thousand dollars' worth of advertising right there. Every pig that we had at the State Fair after we sold this hog for $1,000 we sold for $50 just as easy as we had sold them before for $25. I think that on price is where lots of people fall down. If you are offered a good price for a good hog, sell him. A thousand dollars was the highest I ever got. I sold old Black U. S. for $500, a half interest in King Tecumseh II. for $200, and several others for $200. I always sold pretty low at the fairs to get them out before the chance of cholera. I believe in letting the other man make some money, too. That is the way to build up your trade. If I sell a man a male pig and he is not good I send him another in place of it, and the same way with a young sow. It is the only guarantee I give on low priced hogs. It is just like any other business. You have to do it on a good straight business principle or else you are left. If you have a nice bunch of pigs, say forty or fifty, you are glad to sell them at home for $15 or $20 and make a good profit on them. But you can take them to the Fair and sell them for $20 or $25. Some other fellow will say he won't take less than $40 or $50. He can't sell them for that, so he takes them home, and after he feeds them for three or four months he sells them for $20 or $30. I think it is better to sell at a little lower price and let the other fellow make some money. And I have always found it the best way to look at the prospect of the corn crop, the hog crop, and cholera, and then make up your mind where to start in, and if you are below the other fellow it don't make any difference. Poverty makes a good sale sometimes. We used to have about a hundred pigs every fall. Then we would hitch up to a wagon and attend about four district fairs and peddle the pigs out from $10 to $15, and once in a while we got up to $25. That made our sales average about $10 a head clear at five months old, and a hundred pigs made us $1,000. Lots of times I have slept out under the wagon in the rain, but that didn't make any difference—we got there. I have always found it paid to make friends, and to lend a helping hand to anyone in need. My first and best advertising was by showing at the fairs, and it has always been good advertising. In 1865 I did my first newspaper advertising in what was then the Western Farm Journal (now the Homestead), and have never missed a year in it since. I am a believer in newspaper advertising. I do not favor using large space, but rather a smaller space in the principal farm and live stock papers. When I began there was a good deal of cholera and we had it every year around us. Whenever it came in close we used lots of lime and everything that way and would not allow anybody to come into the hog lots from the cholera districts. I think putting hogs on the market and keeping the number down keeps cholera off the best way. Let the buyer come, and if he takes all the hogs, all right. Put them all on the market at any price whenever thew show cholera, if you only get fify cents apiece for them. That is one reason why I like the medium hog that will fatten at any age. You can sell them easier than the big, coarse hog. I started working for $25 a month and aid $125 for my first five pigs. It nearly took my breath away, but I paid it out. I thought it was too much money and too hard work, but the man I bought the pigs of said if I had not done well by the end of the season he would make me a present of a pair of nice pigs. Next season I had sold my pigs for $10 apiece and had enough money to pay out. There was a good deal of difference in the pigs then. Some of them were nice little fellows and some big, coarse fellows. Look back at the records and you find Berkshires, Chinas, Polands and the big white Irish Grazers. It was these crosses that made up the Poland China. The little chubby fellow came from the Chinas and the sandy spots and the black came from the Berkshires and the white from the other.

At the fairs they aimed to have breeders for judges. The breeder was much more of a success than the college professor. I see it every time at the State Fair. The Expert Judge Association and its standard brings up the nice type that we have been talking about. A judge well posted in the score card will probably give the size a little more weight than the score card does. The score card is much better now than when it first came out. The size is all right, if you can get the quality.

I like to have my litters average about eight or ten pigs, and from six to seven well raised is worth more than eight or ten; and eight, I think, is of more benefit to the majority of farmers than ten and twelve. Not many sows can raise more than eight pigs. The majority of farmers and breeders can not put every sow by herself and take care of her as she should be to raise large litters. There is not much difference between the size of the litters now and when I began. There has been a great improvement made from weeding out the cross sows and those not inclined to be good mothers. And I think the line breeding has been a great help, too. You get more of the same type of an animal in line breeding. I think it makes a more uniform type of animal and that is what makes them look nice—all the same build, color and type, and brings the best price on the market. The change of color has not as much to do as other conditions. Some of the hogs with spots are nearly as good as the black hog. The black hogs have a better and nicer coat than five or ten years ago because they are breeding them up to that. Old Tom Corwin II. had a nice black, soft coat. He grew to be a good, long, smooth-coated fellow, and that is where they got the start. Tom Corwin II. was the first to get nice ears and nice finish. I bought old Black U. S. on order. I had never seen him but had read a good bit, and I thought I could see that the people that raised the Tecumseh hog had to have a good cross, and I thought it was the time to start in. When I went to Ohio I did not find hogs that looked as good as those at home. The herds looked inferior to me and were away back of ours out here. Those Ohio breeders let all their best stuff go at that time, One Price, King Corwin, Black U. S. and Ideal Black U. S., and they began to see where they had missed it. I went back to Ohio and bought a One Price pig. It seemed like I was paying a good price, but I figured it out that if I could bring him back and win at the Fair it would be worth a hundred dollars right there. Indiana and Ohio are nothing to compare with Iowa in the hog business, and it is the same way with Illinois.

A young man with little money can make more money than a man with a good deal who will pay large prices, because he will not pay over $15 or $20 or $25, and if the cholera strikes them he doesn't lose so much. But if he pays $100 or $150 he is gone. He can soon sell out the pigs for $15, $20 and $25, and there is money in it. They don't buy pigs as early as they used to. They wait for the fairs and fall sales. In a way it is a good plan and in another it is not. They don't take the chances of cholera. They pay more money, but the pig is more developed and you can seew hat is is going to be.

I never found a hired man that was all right to take care of hogs. In the first place, may be I have not hired good ones, and in the next place they don't take the interest in it that I do. It is hard to get your own boys to take the interest in it that you do. A person pretty nearly has to have an interest and watch the crop if he is going to take much interest and see if everything is right all the time. If you don't like to work then you have no business to try to raise fine hogs. A lazy man can't raise fine hogs. They have to be watched closely to see that everything is gotten that they need. There is quite a differnce in the feeding qualities and growthiness, and you must be watchful about it. Some sows feed heavily and suckle their pigs to death. You have to watch closely and nct feed heavy, and keep their beds dry. A sow that doesn't suckle well and has a big litter must be fed more.

I have had lots of experience with pigs in little houses and big houses and with stoves. Now I use no stoves and no big houses. I did not find any advantage in farrowing houses. They always get too cold. It is hard to keep artificial heat even. Where you keep five or six sows and litters together it is hard to keep them all warm and not get them stirred up. One in a place is a good deal better than the other way. With a small house covered with straw, except a door on the south side, with wings on each side of it so that when the door is open the breeze can not get in, you will have better luck and the heat of the sow will be warmth enough in the house. They will get plenty of air and sunshine from the door. With houses like this I have had sows farrow seven and eight pigs in the cold weather and be all right. They are cheaper than the big houses. A nice house will cost about $7 or $8 now.

In 1895 we had our first expert judge, Coburn, of Kansas. He had them all get their hogs out in front of the pens. He walked right around through and out (some said he went on a trot), and that was all there was to it. Every class was the same way. They called that judging horseback. It was not at all satisfactory. The next judge after that took quite a bit of time. He scored them all, and it took three days to score them. The scoring gave better satisfaction, but it took too long. We wanted every pig scored just to see what he scored, no difference if it took the man a week. We kept that up for two or three years and then did away with the score card and did more like we do now. Judges have been of varying merit, but most of them have expressed honest opinions. A single instance in which a judge of unquestioned ability placed ribbons in particular classes without reference to the quality of the hog, had a great deal to do with clearing up the atmosphere in the hog rings at the Iowa State Fair. That judge was plainly talked to and he has never judged again. Mostly we had good men to judge, but once in awhile they were not up to the times in judging with the standard of the hog at the present time. I don't know one Poland China breeder outside of Mr. Blackford that came to the Fair in the early days that comes out now with Poland Chinas. B. R. Vale attended most of the time with his Chester Whites. They pretty nearly all dropped out. Got rich and quit, all but me. I would like to see the three-judge system working—two judges and a referee. I have seen it worked where it was hard to tell which was the best one, and it worked satisfactorily.

There being no discussion following Mr. Swallow's paper, Mr. Hakes read his paper on the "Outlook for Hog Raising from a Breeder's Standpoint."

HOG RAISING FROM A BREEDER'S STANDPOINT.

W. R. HAKES, WILLIAMSBURG, IA.

Our Secretary has assigned me to the work of a prophet, but all I can do is to judge the future by the past, which most of us know has many ups and downs, such as cholera, sore mouth, bad March weather, such as we had last March, and losses in many ways to try our hearts and pocketbooks. Yet with all of these we, as hog breeders, have done as well as the breeders of any other stock. But to me the future looks bright to the breeder of pure bred stock, and especially the hog breeder of the present and future who uses good judgment and good food, as a successful breeder must always have a supply of both.

This is a large world and the American hog finds its way to the most remote parts of civilization, and it is to us of the Central West, and will be for all time to come, to furnish fat back or lard hogs for the world. The breeder of the corn belt will always have an advantage, for the corn belt is very small compared with the vast country now being opened up in the United States by irrigation, and the vast and fertile plains of Canada, the extreme North, South and West, that will produce an abundance of grass for horses, cattle and sheep. But as we all know, the final end of the hog is the pork barrel. He must have a fat producing food, and there is nothing so cheap as corn, with a little mill feed to balance the ration. The commercial corn of the world comes from eight States, and the outer rim of many of these eight States produce but little more than enough for home consumption, so we must count on those eight States furnishing the commercial world with pork and lard. Then with the wonderful increase of population by natural increase and immigration of millions from the old world to the United States, it surely means dollars to the hog raiser and breeder. In the first place, the demand for the hog produce on the market is the best that has prevailed for several years. The demand is a broad one and reaches across the water. There seems to be a shortage on the other side that is calling for about all our spare meats, and the farmer and breeder of the United States are getting the benefit of it. There is a smaller amount of surplus meat on hand than there has been for several years past. The high prices that have prevailed this year do not seem to curtail the demand.

There has been quite a general report of loss of pigs of early farrow on account of the severe weather of March and early April preventing the pigs from getting the sunshine and exercise that give them health and life. This all means something to the breeder, as it stands to reason that when the farmer is getting a good price for his hogs that he will want to improve his herd by getting a good boar and a few good sows, and I know by experience that when a farmer is getting around six cents for his hogs he is willing to pay us breeders a good price for his breeding stock, if we have what he wants, and it works the same way all the way up. The farmer buys of the small breeder, the small breeder of the breeder that has better blood, and so on, and we are all willing to pay in proportion to the market.

Then when we look up the figures and find the first of January the United States shows up with 52,102,847 head of hogs, then just think of old Iowa with 7,946,781, or 6½ per cent of the fifty-two million. Illinois comes next, with 4,683,900, or about one-half the number Iowa has. Now, boys, as Iowa breeders, I think we can look the future in the face and see gold dollars in her eyes.

There was no discussion after the reading of this paper and Mr. Simpson, of Des Moines, read a paper on "The World's Greatest Swine Show—The Iowa State Fair—and the Value of the Swine Industry in the Upbuilding of Iowa."

THE WORLD'S GREATEST SWINE SHOW—THE IOWA STATE FAIR—AND THE VALUE OF THE SWINE INDUSTRY IN THE UPBUILDING OF IOWA.

J. C. SIMPSON, SECRETARY IOWA STATE FAIR.

The average swine breeder, and, in fact, to almost all the breeders within our own State, the world's greatest swine show is known to be the annual exhibition of this mortgage-lifter and home-builder at the Iowa State Fair. The great show of hogs at this exhibition is the talk of the whole country, and all others look small in comparison with it. The number shown annually is about 2,500, and only a person with a very vivid imagination can comprehend to what a gigantic exhibition this show would grow to be if space for an unlimited number of pens was provided. I did not undertake to keep account of the number of hogs that were turned away last year for the lack of room, but a conservative estimate would not be less than five hundred. As great as the show now is, think what it would be with 3,500 or 4,000 hogs on exhibition.

In discussing Iowa's great resources with our friends from other States, we at least can always feel that any statement we may make in regard to our great swine industry and the big swine show at the Iowa State Fair will not be disputed.

If the Iowa State Fair has been of no greater benefit, or accomplished no other purpose than in building up the World's Greatest Swine Show, it is worth annually many times more than it has cost the State. To the exhibitor it is a ready market for his surplus stock, besides being one of the best advertising mediums he can use. To the public, and especially the breeder or farmer in need of more hogs, it is the best opportunity in the world to make his selection and purchases; for here he has the opportunity to look over the herds of the best breeders, not only from our own State but from several of the surrounding States. If he would go direct to the farms and breeding establishments to see only one-fourth or one-fifth as many herds, the expense would be many times greater, to say nothing of the loss of time, neither of which he can in many cases afford. Of course, he can buy by mail or by proxy, but at the State Fair he has the advantage of making a personal inspection of all the herds, thus giving him a great number to select from. If I were going into the pure bred hog business I would wait until the State Fair to make my selections, and lay the foundation for my herd from among those exhibited there. I would then have the satisfaction of knowing that I had secured the best possible start in the business. Still further, I have enough confidence in the swine exhibitors to feel that I could with safety ask and take their advice, and that it would be honestly given.

The hog has done more toward placing Iowa in the proud position she occupies—the greatest agricultural State in the Union—than any other industry. While the total valuation of hogs is only about one-half that of cattle and horses, in this value is represented many a farm and happy home. There is many an Iowa farmer who has spent his time feeding a bunch of steers, and after they had consumed his entire crop, found that the selling price would hardly pay the first cost, to say nothing of any profit. Here is where the hog comes in; and, as a general thing, he is always on hand to tide you over and perhaps leave a nice balance on the right side. This same dirty hog is responsible for countless numbers of the finely improved farms in our State, and many is the time when the money received for the sale of the spring pigs is sufficient to pay off the mortgage. So it is with the big red barns that adorn almost every farm in the State of Iowa—the hog put them there; and then, you know, the average family of the American farmer is a lover of music—the hog has furnished the means with which to install a piano or other musical instrument in the home; then comes the carriage—and all Iowa farmers now ride in carriages, though it is likely to be put aside for the automobile some day—the hog money usually buys the carriage. And last but foremost of all these is Iowa's pride; I do not refer to the hog this time, but to the pride of all Iowans—the ladies. Next to the ladies we take off our hat to the Iowa mortgage-lifter, for he usually furnishes the means with which to buy the fine cambrics, shoes and the picturesque hats of which the ladies are so fond. To the average farmer's daughter the thought is not repulsive that to the dirty hog in the back pasture she owes the credit for a great many of the fine clothes she possesses; but from the city bred girl

I can imagine a little turning up of the nose. However, the city depends as much on the hog as the farmer; if the farmer is not prosperous, with money to spend with the city merchant, the latter's business must necessarily suffer. So it is an endless chain, always starting with the hog, and the prosperity of the country can, in a great measure, always be traced back to him. So I say, God bless the hog and the prosperity he brings. I do not believe an assertion that every farmer in Iowa would become bankrupt without the hog would be much out of the way.

If I had any advice to give a young man about to embark in the swine business (if I may be pardoned for assuming to advise), it would be: Don't do it if you do not love the hog, or are not willing to suffer any inconvenience and make any sacrifice that will better the condition of your hogs. You should be perfectly willing to get up out of your warm bed in the middle of the cold, raw, early spring nights to look after the welfare of your young pigs that have just come into the world. And more than that, stay up all night if necessary to save your pigs. If you are not willing to make all these sacrifices it would be unwise for you to attempt to raise hogs, for you surely would fail.

I very much regret that upon the State Fair grounds there is not a sufficient number of pens to accommodate all the breeders who desire to show hogs. This will probably not always be so. In this connection I wish to recall a letter I saw recently in the Breeder's Gazette, from the Secretary of the Nebraska State Fair, in which he stated that all their pens were already assigned, and in this assignment not more than nine pens were given to any one exhibitor. If a similar policy was adopted by the Iowa State Board of Agriculture, would it not be more satisfactory to the exhibitors? It would not increase the show, but would certainly give an opportunity for a greater number of breeders to become exhibitors.

At the conclusion of Mr. Simpson's paper Mr. McTavish said: "In my estimation that was a very able paper. Mr. Simpson says he is sorry not to have had time to do more, but I don't know what he would have given us had he had more time."

The next paper on the program was by Mr. Cox, Jr., on "The Duties and Obligations of the Breeder to His Patrons: Guarantees."

THE DUTIES AND OBLIGATIONS OF THE BREEDER TO HIS PATRONS: GUARANTEES.

JOHN M. COX, JR., HARLAN, IA.

The duties and obligations of the breeder to his patrons are so numerous and varied that I fear I will not enumerate all of them in this short paper.

First, let us see, what is a breeder? and, why is he a breeder? Have we not gotten into the habit of calling every man a breeder who buys a sow with a pedigree and raises a litter of pigs? And have we not also gotten into the habit of calling a man a breeder who goes out and buys the culls of his neighbor breeder and peddles the pigs out at $10 and $15 each? What is his aim? To make the most money from the least expenditure. He has no regard to blood lines, and pedigree is only valuable because it enables him to sell to better advantage. I think there are none of this class of breeders present, as they do not attend swine meetings.

What is a breeder, in the true sense? He is the man who throws all his energies, his life as it were, into his work. Nothing is too good. He is constantly on the alert to learn better methods and to pick up the best specimens of the breed he has selected.

And why does he breed? It is because he loves the work. He loves his hogs; he watches them grow; he corrects the evils as they occur; and in the fall he makes the crack sale of the season because he has the goods.

And now comes his duty to his patrons. I did not say obligations, for the duties of this man are obligations to nim. The duties and obligations of a breeder are so nearly a part of each individual breeder that it is hard to say what would be applicable to all. What I might call a duty to you, brother breeder, you may not think an obligation on you; and what you feel an obligation I may not feel it a duty to do. The larger and more common duties are all known. It is the small ones that we are apt to overlook. And it is the small things in the hog business which tend to success.

I have sometimes in mind placed myself in my patron's place and asked myself this question, what would you have him do? And if you will follow out what your mind dictates you will be doing nearly right. Treat your patron as you would have him treat you. Treat him so that when he leaves you he will feel it was a pleasure to buy of you. You can not treat all alike. Study human nature as well as hogs. You can not go into your yards and handle your brood sows just alike. It takes more diplomacy for some than for others; and it is just so with men.

If any dissatisfaction occurs, I would be willing to meet them more than half way. We can not afford to have dissatisfied customers. When a man writes me for a description of a pig, it is my duty to give it as I see it. It is my duty to tell the defects as well as the good qualities. We are in the habit of telling the good qualities and letting them guess at the defects; or else making them so small that they are overlooked, and yet large enough so that when there is a question on some point we refer to our letter of description and say, there it is. Remember, he is trusting to your honesty as a breeder to give him a correct description.

And it is your duty as a breeder to give the correct breeding of the animal and not guess at it; and when you have sold the pig, then, and go to make out the pedigree, find that you were mistaken in the breeding and have to send breeding different than in your letter of description. Then you are very liable to have a dissatisfied customer, and I do not blame the customer, for I have been treated that way and I did not like it very well.

I once bought a pig on a mail order from one of our most noted breeders (he does not live in Iowa), and he stated in his letter of description that the only objection in the world to him was that he had a black face, and when I received him he had white a third of the way up the nose. I called his attention to this, and he said that he did not think that I would object to the white on his face, and that I was the only man who had questioned his integrity. Now, if he had been careful in his description there would have been no question. As I said before, it is the little things which must be looked after. That spot of white was a small thing, but it was large enough to me to make me think I did not get the pig described to me.

It is my duty to my patrons, as a breeder, to attend to the breeding of my sows, so that I may know to a certainty what they are bred to and when due to farrow. It is my duty to oversee the feeding operation and not trust them to a hired man, who has no interest outside his monthly salary.

The guaranteeing of animals is so closely related to the duties and obligations of a breeder that I would make it a part of them. The question arises, shall we sell our hogs with or without guarantee? Taking the latter up first, I will treat it about this way. For instance, I have a customer for a pig, and I say: "Here is this pig; I will take so much for him, but will place no guarantee on him; while I believe he is all right in every way, you must take your own chances." While they were not worded exactly that way, I have seen guarantees in public sale catalogues that amounted to about that.

There is only one thing that I can see in favor of this method, and that is, when the sale is over the breeder knows where he is at. He knows that he is not obliged to take any of the animals back if they do prove to be non-breeders. But he must be content to sell at lower values.

Taking up the other side, and I think the most popular side, I believe that the guarantee should be absolute—no breeder, no sale. But in selling males or open sows I believe a breeder should have one recourse. And that is, he should have a chance to try them himself, and if they then fail to breed he should pay back the purchase price. And if shipped away from home he should pay the transportation charges. And if he proved a breeder in his hands, to return him to the purchaser and let the purchaser pay transportation charges. If the animal was of only ordinary merit, I would let purchaser return pedigree to me and sell the animal on the market, and I would remit the balance of purchase price.

In selling bred sows is where I think the guarantee should be the strongest. In buying a bred sow I am paying one-half to two-thirds the purchase price for the litter. That is what I am buying the sow for. And I think it the seller's duty to make good if the sow prove not to be in pig. I believe we would save ourselves lots of trouble and expense if we would adopt the plan of selling nothing but what had passed over and was safe. If we sell anything that is not safe, we had better keep it until it has passed over, with the understanding that if it proved not safe to that service that there is to be no sale.

I believe the buyer has some duties and obligations resting on him in his manner of care and feeding, especially when he is buying untried pigs early in the fall. I once sold a pig in September, and about two months later got a letter from the party stating that the pig was bleeding and wasn't any good, and wanted me to send him another pig in exchange. I shipped him a pig on Friday and told him to ship the other back to me on Monday. Two weeks from that time I received the last pig sent him, in a sadly run down condition, and he wrote me that the first pig had gotten all right, and he would keep him. He got two weeks use of two boars with the expense of one, and I had to pay the expense back on my own pig.

There is one matter I wish we could arrange, and that is the matter of guaranteeing pedigrees. There is a case that came under my notice. A party went to a public sale and bought a boar. Then he went ahead and bred his sows and put twenty head in a sale. Then it came out that the record company refused to record the pedigree of the boar. This placed him in a very awkward position. What should be done in such a case?

After the reading of the paper by Mr. Cox, remarks were made by C. L. Funck, of Osceola, Iowa; R. J. Harding, of Macedonia; L. C. Reese, of Prescott; G. W. Hockett, of Manilla; W. B. Turner, of Farrar; Robt. Evans, of Peoria, Illinois; C. C. Kiel, of Ladora, Iowa; W. R. Hakes, of Williamsburg; James Atkinson, of Des Moines; Secretary Carlin; E. Z. Russell, of Blair, Nebraska; J. A. Benson, of Primghar, Iowa; W. M. Lambing, of Cedar Rapids; H. M. Yoder, of Des Moines; and H. F. Hoffman, of Washta.

Mr. Funck said: "This is one of the subjects that I think every person here is interested in and every swine breeder in Iowa is interested in it. If there is one subject more important than another it is this one. I had a little experience with a mail order myself. I purchased a sow from a man at Le Mars. I sent him the money and the order. The sow was due to farrow three weeks later. I did not hear from the man after I sent the order and the money so I wrote again. Still I did not hear from him and I wrote the postmaster and found that the letter was still lying in the postoffice. The man had a rural route and I had written the letter addressed just to the town. Then I told him if the sow was not too far gone to ship her and if she was, to send the money back. He wrote that she would be all right as she was not due for two weeks. The day she arrived at Woodburn, my station, was the day she was due to farrow; that was on Friday. On Monday she had nine pigs. They were dead. That was my experience with mail order, and I think the buyer and seller both have duties and obligations."

Mr. Harding said: "I would like to say a word in regard to the pedigree business. I don't think any breeder ought to put sows in a sale bred to a hog not already recorded. I believe it is an important question, and a good deal of trouble could be avoided if the boars were recorded first. If he is rejected, then all the trouble will be saved both the buyer and the seller.''

Mr. Reese said: ''About eleven years ago I bought a couple of sows from G. R. Sheets, of Cromwell, Iowa, and he said to me 'Let me give you a little piece of advice. Don't guarantee a sow.' And he pulled a letter out of his pocket that cost him $125 besides attorney's fees, and he got $30 from the sow. He said he thought the sow to be in pig and guaranteed her to be. He sent the sow by express and later the buyer in some way proved that she was not in pig. The lawyer said all he could do was to settle or stand a lawsuit and probably get beat. I claim that we should not sell any stuff unless we keep it until we are absolutely positive that they are all right and make it definite in writing. But we should not guarantee, because how do we know? We are dealing sometimes with men hundreds of miles away and we think they are honest, but we have all found men that have not proved just what they should be and for that reason I think we should not guarantee, and should keep copies of letters written describing sows to another breeder.''

Mr. Hockett made the following remarks: ''I agree with Mr. Reese to some extent and to some extent I do not. I look at it in this way. If I buy a sow in pig I am buying her for the good that she is going to do to me, and I want to know if she is in pig. I don't want to keep her for six months. I want recourse. If a man makes a guarantee that the sow is in pig there should be some condition to the guarantee, either to take her back and refund the money, to be re-bred, or to refund a certain percentage of the money. In that way there could be no misunderstanding and no lawsuits. I would not buy a sow from anybody without a guarantee of some sort and I don't believe there are one-half of the men here today that would do that if you expected her to be in pig. If you get her for show you don't care so much.''

Mr. Turner said. ''Men that are holding a public sale want to get all the money they can out of their hogs and if you buy at a sale you expect to pay more than the market price, and if you are going to pay double the market price you want to be sure you are going to get something. I had a little experience of my own. I went to a public sale and in the catalogue in the foot notes of a certain animal read 'We hardly know how to describe this brood sow.' I bought the sow and paid $67 for her. When I got her home she proved to be barren and I found out afterwards that she had never raised a pig and they could not give me a pedigree. I had to keep her for ten months before he would take her back. The record of another hog I bought said that she was bred at a certain date to a certain hog and when her pedigree came she was bred at a later date to her own sire. What should a man do? He ought to guarantee and ought to make it good. In my experience, I was advertising hogs, and as a matter of course I priced hogs to different parties. I had priced to two parties and when the orders came, they came the same day and I sent to the man I priced to first and to the other man I sent a gilt I had selected for myself and wrote him that if she did not suit him he could send her back at my expense. He fussed all the time but he did not send her back and I did not lose anything, but we have all these little things to contend with. I think it would be the best way to conform to the golden rule, do as we would be done by. The man I bought those two sows of had not done right by me. I was dissatisfied and I did not want any more of his stock. We should do as we would be done by.''

Mr. Evans said: ''Along the line of Mr. Harding's remarks, I think that idea of putting hogs in a sale bred to boars unrecorded causes much trouble. A man wants a good hog and wants to know if it is good. If the sire is unrecorded there is trouble for the seller and trouble for the buyer. Nothing should be put into a sale until the sire is recorded. We hear a good deal about the guarantees in the secretary's office and I don't think any breeder loses by doing more than he thinks is right. It is a pretty hard matter some times; pretty hard for a judge to decide, but a breeder can afford to do a little more than he thinks is right.''

Mr. Kiel asked the question if it was not a fact that some record associations would not record stock of some other companies and a good deal of trouble caused in this way. To which Mr. Hakes replied: ''I do not think it is so with regard to any doing business in this part of the country. Possibly there is one in the south that they don't recommend, but I do not know that I have ever come across a pedigree but what could be recorded in any association.''

Mr. Atkinson said: ''As editor of the Homestead, I might be said to be in the firing line. You all know about the volume of hog business that the Homestead does in a year. If a reader buys from an advertiser and gets taken in you may depend upon it that the papers hear of it, and they have a happy faculty in their plan of putting the kicks onto me, so I can give you good information as to what goes on between the average hog breeder and the buyer. I am not at all in a complimentary frame of mind, but, in my opinion, ninety-nine per cent of the kicks that come in are due to the shortcomings not of the seller but of the buyer. I don't say that to flatter the swine breeders, but of course there are various ways in which a man can give a breeder trouble. Here is one. A man writes to three or four different breeders. He gets in due time their prices. Possibly on the arrival of the first letter the description of the hog and the price suit him. He sends for that hog. The next day or so he receives other letters with descriptions that are equally as good and the price less. What does he do? On the arrival of the first hog he sets up a howl that it is not up to description. I inform him in the first place that after looking into a good many cases of this kind nearly every time the fault is with him. The man who sends the hog knows a good hog better than he does. So in carrying out the golden rule, the fellow at the other end of the line is not always playing your game. Nevertheless, I strongly endorse the principle of carrying out the golden rule. My experience is that swine breeders as a rule are always square. Now there is another source of trouble, and I call it to your attention. It is due to the fact that in some instances hogs are not up to weight. You describe your hogs and possibly guess at the weight and all he has to do in that case is to put the animal on the scales. There may be many different opinions as to feet, or head, or back, but there are no two opinions as to weight. I never overstate the weight, but generally if a hog is in good shape, twenty-five pounds under, and the man will be pleased if he gets twenty-five pounds extra weight. The next thing is his foot. I think I am a stickler on that subject because I find that there is a good deal of complaint about it. To my mind there is no excuse for sending to any man a hog with a poor foot. I know you are not doing it, but a man does not need to be a judge of a hog to know a poor foot. He sets up a howl when he gets a poor foot. Then he writes the paper in which he saw the advertisement and we get the abuse. I want to say again that I am not backward in telling the buyer who wants a male hog to use on a grade herd that the buyer in a great majority of cases is wrong. The seller knows a good hog better than the buyer."

Mr. Hakes said: "I would like to refer to a few cases that came under my observation. I am strongly in favor of a strong guarantee. We held a sale on the 18th of January guaranteeing everything or money refunded, for six weeks. About ten o'clock the night our guarantee was up I got two rings. One man who had bought a hog was very much excited. He said the hog was no good and he was quite sure I would have to refund the money. I just eased him off and told him I would refund the money if the hog was not all right. It was simply a case of being scared. I heard nothing more from him nor have not yet. The other man when I heard from him again said everything turned out all right. The third man a while after still declared that the hog was not all right and I told him to bring her back. I never heard anything more from him until week before last when I met him in town and asked him where he had been, and he said he was just raising a litter of six pigs out home. I think if we would give everybody a fair deal that it would be easy to get along with them as a rule.''

Mr. Russell said: ''I believe a breeder can protect himself very easily by not using a male on his herd until he is sure it has been recorded.''

Mr. Carlin brought up the question of records again by saying. ''Someone asked if all Poland Chinas were eligible to record in all records. They are not. There was one little record association in the southwest that is not counted good for anything. All Poland China pedigrees are not accepted by all the records. I think that the produce or descendants of two or three sows that are recorded by one association are not accepted by another.''

Mr. Benson said: ''I believe that Mr. Carlin is correct and still not quite correct. The Standard Record Association at its late meeting decided to accept no pedigrees that were not accepted by the other legitimate records, thus barring out from any record the few families referred to by Mr. Carlin. I think the proper thing for anybody to do when he buys a male pig is to have him recorded before he uses him. There is no question in my mind but the gentleman can get his remedy. If the pig has not been recorded he has been pretty careless. When it comes to guarantee it seems to me there can be no middle ground. It has been close to me for more than thirty years. My father once traded for a cow that raised no calves and he had an expensive lawsuit over it. There are a few little things that are easy to do and one of them is to require return of pedigree. I think that is a very easy way to do with the guarantee and I don't believe any man will find it to his advantage to sell without a guarantee. You should keep anything six to ten weeks to find out if it is all right and if it is not refund his money.''

Mr. Lambing said: "I would like to say a word in regard to Mr. Benson's remarks relative to satisfying your customers. Unless you make a contract to the contrary when you sell an animal you have to make good if the animal fails to be all right whether you have a guarantee or not. The average breeder, I believe, intends to do what is right; the average buyer the same, but we find men doing wrong on both sides. I have been in the business a great many years and I have had considerable experience in that line. I had one experience with a dissatisfied customer to whom, before a final settlement to his satisfaction, I sent three boars, paying express charges on one, only to learn afterwards that all of them were all right and that he had simply worked me very successfully. We have unreasonable men on both sides and the golden rule is the only rule we can go by. If you sell for more than fat stock prices, whether we have a guarantee or not, you can't get away from it unless you make a contract that you do not guarantee. A man must treat his customers as nearly right as possible. There are more men disposed to take advantage among buyers than among sellers."

Mr. Yoder said: "I would like to ask a question and make a suggestion. If an animal is sent back as a non-breeder, can't you ask the secretary of the association to make a record of that animal as a non-breeder and let him stand as such until you want him taken off?"

Mr. Cox said: "A red hog man bought a pig from one of my neighbors and after he had him a while he said he would not breed. He brought the pig back and the pedigree, but he copied the pedigree and signed the breeder's name to it before he brought it back."

Mr. Evans said. "In reply to the suggestion of Mr. Yoder I would say that we do follow the practice. We had a notice in the red hog case referred to by Mr. Cox, but he brought the record in too late and it is being held up now until it is settled in court."

Mr. Hockett said: "I would like to relate my experience. I have done considerable mail order business and have generally had good satisfaction on both sides. One trouble I had was a mail order that I got from near Sioux City a year ago last fall. He was a very poor scribe and a poor scholar and he asked for a description of pigs. I gave it to him and by return mail I got an order for a pig and he wrote me that he would like to have the pig weigh "too a hundred pounds." I described the pig as weighing from 175 to 225 pounds. I sent him a pig weighing 150 pounds. I think, however, that he wanted a pig to weigh two hundred pounds, but it was hard to tell from his letter. In another instance a neighbor of mine whom I considered a straight man bought a male pig of me for $18 and took him home. He was a good individual but in the course of time he came back to me and said he was no good and I would have to take him back. I told him to bring him back and take a litter brother to him. He was in fine shape and the one he had had gone the other way. He took the second pig home. He had about thirty sows in his heard but he sold the pig. I made inquiry from the man who bought him and he said he bought him right away and he was to have him as soon as he got him. He had used the first hog and then brought him back as he could get the second one and sell him. There are very few who will do such things but we do have them and we have to guard against it.''

Mr. Reese said: ''The reason I spoke of this in the way I did was because very nearly every person in this room knows that the law says if you sell any animal of any kind as a sound animal it must be a sound animal. If you sell a sow in pig, what is my guarantee? If I sell a sow for $50 and another for $50 and the first may raise ten pigs but the second prove she had no pigs. Then it goes into court. I don't think it is right to guarantee when every one knows that the law guarantees.''

Following Mr. Cox's paper and its discussion a paper on ''The Grass Grown Hog and His Value as a Breeder'' was read by Mr. Hockett.

THE GRASS GROWN HOG AND HIS VALUE AS A BREEDER.

G. W. HOCKETT, MANNING, IA.

This subject is one of vast importance to the swine breeders of the corn belt. Nowhere in the world is the tendency to refinement so great as here in Iowa and her adjacent states. It goes without saying that there must be some reason for this.

The hog as our forefathers found him was a wild animal with free range, rambling at will, rooting for herbs and eating what he could find that in his wild nature seemed good, exercising from morn till night. Grain of any kind was unknown to him. But since his captivity, man has forced him to change his habits, to change his diet, and has changed him from the wild, angular rail splitter to the docile beautiful animal of today. This change has been effected in two ways. First, by care in selection of breeding stock, and second, by care in feeding. It has been said "Show pigs, like poets, are born, not made." But in my estimation there is fully as much in the care and feeding. It is true we must have the individuality to build on. But it is equally true that that individual must have proper feed and care to develop it. The term develop is very often misused and I think in many instances misunderstood. The word develop is often used synonymously for fatten. This is a mistaken idea. A hog may be fat, yet not developed. In order to develop a pig he must have suitable food to give him growth of bone and muscle and regular exercise to give him strength and vigor.

We in the corn belt usually make corn a part of the pig's ration, which is all right if judiciously used. But in too many instances corn is made the exclusive diet, which is very injurious to the pig. This may be done in two ways. First, by keeping the hogs confined in pens where there is no opportunity for them to obtain grass or other green food and not supplying it, but feeding wholly a corn ration. Second, by allowing range of pasture but feeding too large quantities of corn. The hog will not gorge himself on corn; his appetite being satisfied, he has no inclination to exercise, hunting over the pasture for more feed, but will lay down in the shade. In a short time he becomes sluggish. He becomes more and more corpulent. His bone and muscle become weak and exercise becomes more painful to him. He can hardly walk from the shed to his feed. He may be gaining in weight. He may look nice, but he is not developing. He is fattening. The hog does not differ greatly in his anatomy from the other domestic animals. For an illustration, take a colt at weaning time. Put it in a small pen and feed an exclusive corn diet for a year, If it withstood the treatment, how many would select that colt for a breeding animal?

In order to develop a pig, he must have a balanced ration and plenty of exercise. For convenience and economy it is best to furnish a pasture sufficiently large to furnish plenty of green feed and afford an opportunity to ramble at will, gathering food fresh from the bosom of Mother Nature. growing. Then a hog should be allowed to rustle some to develop stamina and trait of character and learn to make the best of his opportunities. By this I do not mean to starve. There are two extremes, stuff and starve. One is almost as injurious as the other. There are very few pigs highly fitted to be shown in the under six months class that ever make a hog fit to be shown again, and very few there are that ever begot or bore pigs that were able to win in any class. There are reasons for this. They have not been developed, but weakened, and in most instances the highly fitted pig under six months of age is at a yearling a physical wreck.

We might liken them to the pompous sons of millionaires, reared from infancy with a golden spoon in their mouth; reared in luxury and ease, when thrown on their own resources they are wholly unable to grapple with the problems of life. None of them have ever become great financiers nor great statesmen, but all our truly great men have come from the middle classes.

Of course there is an incentive for us to produce big weights at young ages. We do not want Mr. Jones' pigs to be larger than ours. And there is always a demand for the fat pig at good figures, which is a great temptation. But the sooner we wake up to the fact that the grass grown hog is the breeder that will bring the show pigs that will win, the sooner we will be on our road to success.

The farmer's boy does not look so attractive following the plow with his overalls on, but let him become physically developed, having grasped such opportunities as usually come to the average boy, then send him to college to finish his education and put on the veneering. We will find him able to appear to advantage in any society, able to successfully grapple with the great problems of the age and to successfully fill a place of trust in any branch of commerce.

So it is with the grass grown hog. He does not appear so attractive in the pasture with his every day clothes on, but let him grow up, become fully developed, and then he is ready to be fitted. When fitted, he is ready to appear in the best society; ready to be a credit alike to both breeder and owner.

After the reading of Mr. Hockett's paper remarks were made by L. H. Roberts, of Paton, Iowa; J. A. Benson; O. E. Osborn, of Weston, Iowa; G. W. Hockett; W. M. Lambing; Wilson Rowe, of Ames; and President McTavish.

Mr. Roberts said: "I don't want to say anything on the question but I would like to hear from some one that can say something about the overfeeding and the development of the pig. One of the greatest mistakes that breeders have made in the past is the overfeeding of the young animal before it has developed. As I have said here before, I would rather see a pig in a good clover field without any feed, with a sow and plenty of water, than to have it overfed, and I think am right."

Mr. Benson spoke as follows: "I think that was a most excellent paper. He did not mean that he would raise his pigs on grass alone, and while I agree with Mr. Roberts, he puts it rather strong. I believe there are more pigs spoiled from nothing but grass than there are from nothing but corn. There are many hogs turned out in the pasture in the spring that are not any fatter in the fall. But I like the gentleman's paper. We are a good deal oftener not feeding enough along with the corn than the other way, and I think the grass lot is the salvation of the hog."

Mr. Osborn said: "I think it depends considerably on the kind of pasture. I think alfalfa is the best kind of pasture. You can use less grain with it than with anything else."

Mr. Hockett. "I want to say a word in explanation. I do not advocate that the young hog should be forced to exist entirely on grass, but I think I can prove that a pig turned out on grass until fall will be better than one fed on corn and left to lie in the shade."

Mr. Roberts made a few more remarks as follows: "I do not think a hog should be grown on grass alone but I think the feed should not interfere with the development. Nine-tenths of the hogs in the pasture are killed before they are eight weeks old by feeding them corn."

Mr. Lambing said: "The question of alfalfa has come up and as it is a comparatively new feed I would like to have Mr. Rowe, who is having experience with alfalfa, tell us about it."

Mr. Rowe refused to say anything about it except that "It was all right." Mr. Lambing replied: "I have observed that such fellows as Rowe and Swallow who know more than the whole bunch of us won't tell anything and we fellows that don't know anything are always talking."

Mr. McTavish said: "I think this is a very important question and I think that the woven wire fence is revolutionizing the hog industry in the corn belt, and when the farmers and breeders learn to use every bit of pasture on their places and use every bit of waste in all the feeds, then we will be freer from cholera, and we will have better and more profitable hogs. It is coming about very rapidly with the advent of the woven wire fence. It won't do to let the pigs lie behind the crib with nothing but corn nor it won't do to let them have only grass. I believe in feeding a little corn all the time to balance up."

Following these remarks and closing the afternoon session, Dr. J. H. McNeill, of Ames, Iowa, gave the following interesting talk.

TUBERCULOSIS IN SWINE.

DR. J. H. M'NEILL, I. S. C., AMES, IA.

I assure you it is a pleasure to me to be with you this afternoon and attempt to discuss a subject that is of very vital importance to all of us. I like to meet with the live stock men of Iowa, the swine breeders and the cattle breeders; and I do not believe that we find anywhere a more enthusiastic and interested band of men than we do among those engaged in that work in Iowa. There is a story that is told of the swine breeders and their interest in their work, and it runs something like this: A man drove up to a farm and inquired of the boy for the owner of the place. The boy said his father was at home, that "he was down in the lane feeding the hogs. You can tell pa. He has a hat on." They are interested in their work and interested in producing something good.

The subject of tuberculosis is one of worldwide importance. It is one that we are all interested in. We are interested in the subject from the standpoint of human tuberculosis, and probably from that cause we take a deeper interest. Tuberculosis in man, tuberculosis in animals, no matter whether swine, cattle or fish or birds, is practically the same. It is simply a modification of the tubercular germ or adapting itself to a different animal or individual just like the seeds that you take from one section of Iowa to another. They get acclimated, grow and develop and get so they will grow in that part of the State; and so it is with the tubercular germ. The different classes of tubercular germs simply depend for their existence and change in shape upon the environment in which they grow. Whether they are more deadly or less deadly depends upon the tissue in which they grow. The different germs as they grow and develop affect animal tissue. In taking up the subject of tuberculosis in swine it will be necessary to consider tuberculosis in general as it concerns cattle. Tuberculosis by the ingestment of food, sputum, excreta—the common cause of tuberculosis in swine—the different conditions or situations or general influences have all to do with the production of tuberculosis, no matter whether in the human family or in the animal kingdom, and in order to take it up and discuss it I simply follow notes that I have made.

Now, as to tuberculosis in cattle. We know that we have a great deal of tuberculosis in cattle. We have a lot of tuberculosis in cattle in Iowa because we have a lot of cattle, and we have a lot of well bred cattle, and cattle that are well bred are usually well cared for. They are kept inside, kept tied up possibly a good part of the time, and animals that are kept under these influences develop tuberculosis to a greater extent than a herd of animals turned out in pasture or in open lots. There are many reasons why animals kept together will become infected, or where one animal in a stall will infect animals around. One reason is that where we have tuberculosis of the glands of the throat the cattle cough, the matter drops in the feeding box, then it is pushed along the trough and the different cattle along the trough become infected as a result. Animals kept in single stalls with high partitions will affect animals on either side, but not those in the stanchions kept away. There is a difference in susceptibility. Some individuals will contract tuberculosis while others of the same family under the same conditions will not. It is not hereditary. Recent experiments extending back for ten years have demonstrated this. We sometimes find tuberculosis in the offspring where we did not find it in the parent. The inherited tendency to become affected is the reason why one herd of cattle will get it or one strain of cattle and transmit the same tendency. The same quality that existed in the tissue affect the general conformation of an individual as the polled condition in the Angus or in the Galloway. There is a certain property that the tissue has of taking up germ life and giving it life and existence. You will find the tendency in certain individuals of a family. That individual probably is more susceptible to scarlet fever or some other disease. That is simply the tendency that exists on the part of the animal body to take on these germs and become infected. There is a large percentage of human existence that become infected with turbercular germs. It has been estimated that probably 50 per cent of the individuals that reach manhood and womanhood that die from other causes have at some time been infected with tubercular germs. It is the same in cattle, and we have it so in all of the warm blooded animals.

In passing on from this introduction into what we are to discuss, we find that the conditions or environment surrounding swine disease are a little different from those of cattle. The swine are shipped to market usually within a year. The disease develops with rapidity in swine. If they do not have the influences surrounding them for infection, they go to market without tuberculosis. This is proven from statistics from Iowa and Wisconsin of tuberculosis in swine from dairy districts. About a year ago I was at an abattoir and for seven days' killing we had from 230 ninety-five condemned in one day, and from an aggregate of 4,777 animals 101 condemned, which makes 2½ per cent. One day from 528 killed there were nineteen condemned, from 617 killed twenty-five condemned. I talked with the inspector, and he said that for that time of year that would be a good fair average. The infection was brought about by the use of separator milk from creameries or separator milk from the man's own farm. It seems like an easy matter to get at in order to stop infection or what will prove a loss to the farmer. In regard to tuberculosis in Iowa I have talked with commission men in Chicago, and they tell me that there are certain dairy districts in the State of Iowa that they would not buy hogs from; that if they did they would buy them at a reduced price, so that if you live in a dairy district and ship your hogs to Chicago and they know where your hogs come from, they buy hogs that they think are all right. They come around to you after they have bought what they want and they will pay you at a low enough price that they will have assurance that they will get their money back, or enough out of it to pay for loss of animals condemned. It will react in the end. It has reacted in Iowa. I know of three districts. I have talked with inspectors and with firms that say they will not accept hogs from certain buyers because they have lots of tuberculosis in that district and they will not run the risk of losing hogs from inspection. The packing house people in Iowa are not going to deal in hogs that are tubercular. For instance, we have an infested district here in Des Moines. You telegraph for markets to Marshalltown and they telegraph back they don't want your hogs. You ship them to Chicago. If they do not know about the tuberculosis they will accept them and of course you are paid accordingly. It can not be detected before they are killed. They may be and probably are just as fat as the other hogs. If they are not tagged before they go to the abattoir, the packer will lose. If 2½ per cent of the animals shipped in there are tubercular it means a loss to somebody. What will the packer do if he keeps it up? They will do what is best for themselves, and that is, instead of making the prices lower and taking it from you, they will go back and say, I will buy your pigs, and if they pass inspection I will pay you. If you send hogs and they pass inspection you will get your money. If another man sends hogs fed on creamery milk they will take his hogs. If he sends sixty or seventy head and twenty are condemned they will figure it on the bill the same as feed and yard and everything else. There is some conjecture today as to the way in which the packers will get around the subject of tuberculosis.

Infection comes from the creamery. You get it in butter, in cream, in cheese. It comes from the cow and from the udder of the cow. If you have tuberculosis in your cattle you will have it in your hogs. You can test it by tuberculin test. There is a chance for a mistake, but the percentage of mistakes is very small, so that for all practical purposes it is the best one we have. It is not infallible, but it is a good test. In this infection of tuberculosis we find that there are practically three kinds, pulmonary, intestinal and mammary; pulmonary, of the lungs; intestinal, of the intestines; and mammary, of the mammary glands. We know that in cattle the infection is brought by the air or the food. It can be carried, and we know that infection is by the animal having tuberculosis of the lungs and expectorating this matter, but instead of spitting it out they swallow it and it passes through the digestive tract, and by this method you get an intestinal infection. You might have the lung infection; second, the abdominal or intestinal infection, and lastly the mammary infection. You do not have to have tuberculosis of the mammary glands in order to get tubercular germs in the milk. This is one of the most prolific sources of its being transmitted to calves and pigs. You can have what we call generalized tuberculosis or local tuberculosis. Local tuberculosis does not enter the blood serum, but as soon as it enters the blood serum it is generalized; from the heart to the lungs and the different organs of the body, in the spleen, heart, and so on. Tuberculosis is not what we call blood poisoning, meaning a condition in which we have septic material in the blood not longer than six days after inoculation. Tuberculosis, first, last and all the time, unless it becomes generalized, is local. The kernels that come in the neck are distinctive. You find that they enlarge. You get them in the armpit, in the limphatic gland, and as the gland becomes broken down, like the outpost of the army, the enemy advances and marches on and on until they are in the fort. So the infection follows from one gland to another until it becomes generalized. From that you get mammary tuberculosis. During the time the tubular germs are circulated in the blood they may be excreted through the cells into the milk and then fed to hogs and calves or to human beings. Of course they do not always react or become affected. In this mammary form of tuberculosis there are some symptoms by which you can tell between mammary tuberculosis and what you know as garget. In the one the swelling may take place in one quarter or in several quarters, but usually only in one quarter. The swelling is very hard, painless and without heat. In garget you usually find the swelling painful, very hard and rapid in its formation. The one is chronic and the other is not. In using animals for dairy purposes you should exclude the individuals that have anything wrong with the mammary glands from milking and have them shipped or sent to the butcher or something done besides using them for dairy purposes. Now as to the amount of this mammary tuberculosis. In the tests that have been made, and especially in Germany, where they have a rigid inspection and where they carry it on in a good manner, they find the number of animals that react about 6 per cent; in this country 2 per cent, so that two cows out of a hundred have mammary tuberculosis. Suppose you have a dairy where there are probably three hundred cows. You would have in the three hundred, six cows that are discharging bacilli in the milk at every milking. What do you do with it? Send it to the creamery, stir it up together. You take in your milk cans and get a portion of the milk back. You feed it to your calves and pigs and you get tuberculosis, or if you did not have it in your own cows you would get it through the kindness of your neighbors in getting their milk at the creamery. You get it started in the calves, breed the calves and keep the new herd and you have it in your herd, and it is just as hard to get rid of in that form as in any other. Then during the development of tuberculosis or in its infection of the individual you can get tuberculosis of the lungs developed as a result. In an experiment in Washington under the direction of the Department of Agriculture, in one herd they had 112 cows. They used fifty-six cows that reacted and saved from each milking a pint of milk. From this milk a preparation was made from which tests were made on the cows that showed no evidence of having mammary tuberculosis. Tests were made with a microscope to determine whether tuberculosis germs were in this milk. The experiment was carried on for several months and showed that of the fifty-six cows, nine of that number, or practically about 15 per cent, threw off tubercular germs into the milk at some time during the milking period and did not have mammary tuberculosis either. It does not follow that they have tuberculosis because it is in the milk. It is not enough to affect them. There is one thing about the development of the tuberculosis in swine and that is that it is very rapid. In practically a few months you will find that there will be a total infection of all the internal organism and all of the glands.

About the milk. I remember in Buffalo of getting what we call skips. They bought all of the cripples in the yard, and in this bunch we had four skips. They would weigh from fifty to sixty pounds. They were run through the ordinary routine of slaughtering and they were all found to be tuberculosis. We traced to where they came from in Ohio and found that they were fed on skim milk from a dairy. That was the history. You find a lot of it. You find it in Ohio and Pennsylvania and in other States where they feed on separator milk without boiling it and as a result they have tuberculosis. We have a law in the State of Iowa, which is to go into effect in July, that all separator milk must be heated to 185 degrees Fahrenheit. There is no provision in that law stating how long that heat is to be maintained or how. In the experiments in dealing with tubercular milk they have not arrived at any conclusion as to the degree of heat required to kill the germ aside from 212, but the tubercular germ is the most inceptive of all germs detrimental to health. Thus must tubercular milk be heated to a higher temperature in order to destroy the germs. It has been advised by Bank, who is an authority, that if 185 degrees of heat is used, the milk should be subjected to that temperature for five minutes at least, and should be stirred, as if it is in an open vessel there will always be foam on the top. The germ will stay in the foam and the top does not get as hot as the bottom. In some of the creameries the milk would not stay in more than a minute, so that the ordinary methods employed in sterilizing milk are not what they should be, and I think that for feeding hogs and calves that milk brought to a temperature of 212 would be a safer temperature. If you have not all the appliances necessary to sterilize the milk then it would be better for the milk and for the good of the individual you feed the milk to, to heat it to 185 and let it stay at that temperature for five minutes.

Now I would like to take up this matter of inspection. I will simply say that I do not have any other reason but for your information. I have been in the government inspection in the eastern cities and in the West, and I know something of it, and I know that the inspection as carried on has been as efficient as it could be made with the laws existing and the money at the command of the Secretary of Agriculture. It has not been complete simply because they could not get inspectors; they could not pay enough. And as to the ante-mortem inspection. That is done, of course, but it could be omitted without a very serious loss because animals do not always show outward evidence of the disease. It is done in some of the eastern inspection bureaus, but I believe it is not done in Chicago. There is no law compelling packing house people to kill animals that have been condemned; that is, compelling them to kill them at their abattoir. In the inspection of calves, if you have an anti-mortem inspection, there is no law if they do not pass to compel them to be killed. If they are rejected I don't suppose they will dump them in the sea. Instead, they are taken to some abattoir where they do not have government inspection and then put along beside government inspected calves and sold. It is done in lots of the markets. It is not a question of the inspection not being efficient enough, but because the inspection does not go far enough. It stops short and it can never be done, no matter whether inspection of cattle, hogs or what. In the inspection as carried out in the inspection of hogs, they have two and sometimes three inspectors. One of the symptoms of the tuberculosis in hogs is in the glands of the neck. It is impossible, where they are killing large numbers of hogs every hour, for the inspector to examine each one. But an inspector with training will be able to find any hog that is diseased. He knows it when he sees it. He knows just as much about that as you do about judging good hogs, simply by looking at it. If there is something wrong there is a halt. It is dismembered and they cut off a certain part and the inspector can tell what is wrong. Then it is tagged, pushed into a cooler and left there until inspection time after the day's killing is over. The cooler is under government lock and key. The packing house people have no more right in there than I would at a bank to step in at the private office without having business there. The microscopic examination is a thing that has always seemed superfluous to me. If you live in Sioux City or Cedar Rapids and go to a store in the outskirts of the city and buy meat, you get meat that is not government inspected. You have government inspection, but you don't have to have government inspected meat. Just as soon as you go over into Illinois you have to have it inspected. The government makes you inspect it. I don't know why it is not so in this State, unless it is because we do not have laws good enough to make State inspection. Any meat that goes to Germany has to be microscopically examined. Why not have it for ourselves? If it is dangerous for the German it is dangerous for the American. But the first reason is that there are not laws. It must be taken up and considered.

A few words about hog cholera and swine plague. There are fifty million dollars' worth of swine in Iowa, one-eighth of the total value of live stock in the United States within the State of Iowa. I have the information from the live stock journals. Fifty million dollars is the valuation of hogs. Now, if you figure the loss of 6 per cent, that means three million dollars less to the hog raisers of Iowa every year. That is due practically to swine plague or hog cholera. There is not much difference between the two diseases. The swine plague in England is hog cholera in this country. If it is in the intestines we call it cholera. They are nearly always a mixed infection. We thought we had at one time discovered what caused hog cholera. In the last two years it has been found out that it is an invisible germ. We have to deal with it from a practical standpoint. Suppose we have a loss of three million dollars from the hog raisers of Iowa. The loss from tuberculosis is not a direct loss as far as the loss of the life of the animal, but it is a loss inasmuch as an animal with tuberculosis will consume more corn than an animal in a healthy condition. There are certain factors that will tend to produce hog cholera. It has been argued that corn will do it. Corn will not produce tuberculosis. It will produce a condition of the digestive tract by which the germ will not be destroyed because of a lack of acidity in the stomach. The germ slips by and passes into the intestines and causes what we know as hog cholera. The toxine generated by the germ floats in the system and affects the animal. How is it to be dealt with? In Canada they have a plan of quarantining and slaughtering every herd in which there is swine plague or hog cholera. They have that way of dealing with it in order to suppress it, and that is the only way that they will ever be able to extinguish swine plague and hog cholera. It is the only preventive. Just like the foot and mouth disease that they had to stamp out by buying up and slaughtering everything that was affected. If it breaks out again that is the only practical way of getting rid of it. The loss of a few individuals does not mean much. It is the loss of the individuals that they would gain in the time that they are affected. In order to suppress the disease you must destroy it. It is the same thing with hog cholera and swine plague in Canada. They have government inspectors that patrol the State. When they find an outbreak they quarantine the herd, slaughter them, bury the animals and disinfect the pens. When they do this they pay the owner two-thirds the valuation of the live stock both for diseased and non-diseased animals. For a time they paid the owner for only the diseased animals, but it did not work, and now they pay for everything. In order to keep out swine plague and hog cholera from Canada they have inaugurated a very stringent quarantine. Whether it is the right plan or not is for you to decide, but it seems to me the best plan to destroy the animals and reimburse the man. There is not one of you that would take hog cholera home just for the fun of it. You are not responsible and why should you suffer? It seems to me that the State should pay it. I would be willing if I was a hog man to pay a little extra tax in order to reimburse the man who may lose. Then after a while there would be no hog cholera and there would be no extra expense. How much of that three million dollars of loss would it take to have government inspection? Take it out of politics entirely. If an inspector is in his position because of civil service appointment then he takes care of his position, because when he ceases to enforce the law he is down and out. Think what the expense would be, but after a while you would have less disease. You could not do it in Iowa unless all States would agree to help you do this. It should be a National law with the assistance of the States. It should be taken up in a practical way. If we don't get laws this will be a dumping ground for the other States. We should have efficient laws wherein we say, you shall not bring into this State animals that are tubercular. Dealers will bring their stock to Iowa because we have no law and they can sell them. And I know of instances of that kind. If I was a hog raiser I would, if I bought an animal, quarantine the animal for thirty days before I put it in the herd, and it would be the last one to feed and tend to after I had tended to the other hogs. I would put up a smallpox sign, if necessary, to keep people away from it. And if there was hog cholera in the neighborhood I would advise my neighbors to keep their dogs tied up. Just those things carry tuberculosis and hog cholera. A man may come along to a neighbor's, get into the hog lot and not know there is any hog cholera or swine plague. He gets dirt on his shoes. Then he comes over to your place, climbs up in the pen, whittles a stick and cleans his shoes. He stands around the pen, the trough or the corn crib, and the next thing you knew you have hog cholera. You think you got it from crows or buzzards or from a passing wagon. I know a place near Perry where a breeder went to help a neighbor thresh. The neighbor had hog cholera and left the carcasses lying in the stubble field. In two or three weeks, just about time enough to get the hog cholera, the breeder lost pretty nearly all he had. It can be carried in all sorts of ways.

There is another thing that is important to me. That is the hog cholera cures. I think they are an abomination. A man is just throwing his money away. If the Department of Agriculture at Washington, working for a good many years with scores of assistants who have not been able to discover a serum or a vaccine, I do not believe that Tom, Dick or Harry that starts up a store and fixes up a drug mixture has found a cure for hog cholera. Nothing ever came by chance in such a way as that; you are foolish to take up with such things. Of course they tell you they will treat you honorably and you need not pay them a cent until they can get the hogs under the effect of the remedy. The agent says it will take some time, and I presume he will look around and find out how many are lost. If a man has a lot of pigs it will take a little longer for the drug to get in its work. He takes the contract, and says he will pay you so much for all the hogs that die. When the drug commences to work all the pigs are dead. He does the same thing to the neighbor and does it right along. Now, there are some who say you can get an immunity from vaccination, but you must use an anti-toxine first. Now what we mean by anti-toxine is simply an anti-body or a body that acts against. You take it for zetanus or lockjaw. Sometimes it lasts a long time and other times it lasts for but a few months. In certain individuals it lasts longer than in others. When you inoculate an animal that animal has a mild form of the disease, lives through it, and after that is immune. I have heard it said it was a good thing to have hog cholera around all the time. A hog that has been vaccinated has a mild form of the disease and then it is an immune, has practically had hog cholera. These germs that enter are weakened germs and they produce a gradual immunity, but they carry these germs with them and have what we call chronic hog cholera. When you vaccinate it is all right for the bunch you vaccinate, but it is not all right for the hogs you bring in. They may stay around the hog lot, and as soon as you get the vaccination it is all right for you, but if you have a neighbor that wants a brood sow and you ship it out to him, his hogs will get hog cholera and he will wonder where he got it. He got it from that vaccinated hog. Another thing, you have a lot of hogs left from an attack of hog cholera. You have perhaps ten, fifteen or twenty from a bunch of a hundred. They are immune. They will never have it again, but they will have ulcers in the intestines that range in size from the size of a dime to fifty cents, and sometimes as large as a dollar. These take a long time to heal, and while they are going through the healing process there is more or less dead tissue, and you have hog cholera as long as you have any hogs from that old bunch. It exposes the hogs that you buy to infection. The best thing to do with that kind of hogs is to get rid of them. Send them to market. Break up your ground, disinfect, and get in a new trough for the hogs. Some of the hogs will get well. I have known hogs to be shipped across three or four States. The older hogs will resist this infection for a long time, and they may have it in a mild form, but that does not hinder them from having chronic lesions. The other hogs, being exposed, have hog cholera from the infection within two days—from two to thirty. We usually say from seven to fourteen days we get hog cholera or swine plague. The only way to combat those thing is go get some laws, and the way for you to get laws is to get legislation. Get interested in politics when you want to get laws, and have the legislator not only promise but see that he does it. If he don't, turn him out and get some other fellow. And then have the laws enforced. The man that owns the creamery won't do it. It will take time. If it is not brought to his mind he will forget about it, or he may not know about it, though the law does not excuse him for his ignorance. There is a law regarding the importation and inspection of breeding cattle, but of course there is a weak spot in that. I presume the reason it was not made stronger was because they thought it might interfere with the entrance of cattle from other States. I am told that there are men in certain cities that permit the hauling of dead carcasses along the roads. If you do not prevent that and your hogs die no one is to blame but yourself. Then there are hogs lying around the farm. It is not an easy thing to do to tell a neighbor to do that, or this, or another thing. He may tell you to do something. But is a thing that should be done to protect yourself against hog cholera ad tuberculosis. If you will get State laws as good as some states have them, then we can build up and add to. For Iowa to be as great a live stock State as she is and be as far backward as she is in these laws, I am sorry to see it. If you want these things get after the newspaper men and have them help you.

In the discussion of Dr. McNeill's paper, remarks were made by H. M. Yoder, C. G. Kiel, L. H. Roberts and Robert Evans.

Mr. Yoder said. "Don't you think more often men lose hogs from pneumonia and call it hog cholera? I knew a man that let his hogs sleep out on the ground. They died and I think it was pneumonia."

Mr. McNeill said: "I think it was pneumonia, too. My brothers raise hogs and they were letting the hogs sleep out. They had something like a hundred head and they noticed that the pigs kept getting sick and they examined them and the lungs were affected. They lost forty or fifty head. Then they took the farrowing pens and every night put them in and after that they never lost a pig. The loss was due to the fact that they were exposed. They huddle together and in the center they get warm and steamy and in the morning they get out in the cold air and get cold and pneumonia."

Mr. Kiel said: "That has been the most interesting subject that I have heard for many a day. I would like to ask some information. In pasteurizing the milk is that sufficient to destroy the germs of tuberculosis?"

Mr. McNeill replied: "If the temperature is raised to 185. In these pasteurizing machines they run the milk through in a thin stream. In pasteurizing the milk you kill the germs. Using pasteurized milk in two or three days is more dangerous because it developes a toxine as the germs of lactic acid. But in the pasteurization of milk it seems to me the safest plan to follow would be raise the temperature of the milk to 185 and keep it at that temperature for five minutes. I was talking with Mr. Gray last night and he said from what he could find that milk should be stirred and that it should be raised to 185 and kept there for five minutes."

Mr. Kiel said: "In regard to inspection of cattle in Chicago. We ship cattle there sometimes. Sometimes they have a lump in their neck and that is cut out. The steer is all right—fine and sleek. They will tag the steer and perhaps in about three weeks we get word from them that it has been passed as satisfactory for food. The lump is just in the skin. It is only a scar of the lump that was cut out. The tag means that it is to be examined. Then we get a bill of sale—so much for the hide and so much for the carcass. I sold a car of cattle for export. They said three of them were held up. They said they had been bought by an exporter. They had scars where these lumps had been taken out. They said they were examined and after that they were held up. I would take my chances on having them held up in Chicago."

Mr. McNeill said: "I never inspected export cattle that closely."

Mr. Kiel asked: "Do you mean to say we could stamp out tuberculosis the same as cholera?"

Mr. McNeill said: "No I am not offering any solution of the cholera question. I don't want you to get that impression. I don't know how to get rid of it. It has been tried by a good many men, but it seems to me there are ways that we can suppress a good deal of it. Some say there should not be compensation for slaughtered hogs that were affected. If a man has a cow that is tubercular she is not useless; she can raise a calf and produce milk that is good if it is sterilized. Mr. Edwards, of Canada, maintains three herds, a quarantine herd, a tubercular herd and a tuberculosis free herd. Everything they get he puts in the quarantine herd. If they are not all right they put them in the tubercular herd and he says it is the best herd he has. In the discussions that have come up in the National Veterinary Association it has been stated that there is no plan at the present time that will do away with tuberculosis, but the plan adopted in Pennsylvania will do a great deal towards that end. They make application to the State for a test. The State does the work for nothing and pays for the animal that is killed. There is another thing. If a State like Iowa attempts to do anything like this she should have some provision that the animals that react will not be thrown away, but that they should be sent to an abattoir and inspected and if they pass that they should be paid for, and if they have to go to the offal the owner should get an offal price."

Mr. Kiel said. "Don't you take it that eventually people and cattle and hogs will become immune from tuberculosis? We don't have small-pox as we once had. People have it only in mild form."

Mr. McNeill said: "Yes, if we live that long."

Mr. Yoder said: "Is hog cholera more prevalent in a corn country? I think the question is largely solved by Mr. McTavish's suggestion about the woven wire fence."

Mr. McNeill said: "Of course the pasture helps, but woven wire fence won't keep out tuberculosis."

Mr. Roberts said: "Don't you think there is some benefit in putting a small percentage of solution in the tanks?"

Mr. McNeill said: "I think there would be some advantage in doing so and I think the liberal use of coal tar solution is a good thing. Then the swill barrels should be cleaned out and scalded to keep it clean. The hogs do not get enough of the solution in drinking to hurt them. When you have hog cholera in the neighborhood all of these things help to keep it down."

The question of the tuberculin test coming up, the doctor gave a description of the test, with which, of course, the majority of our readers are familiar.

EVENING SESSION.

The evening session opened with the following paper:

CARE OF THE BROOD SOW AND HER LITTER, AND SELECTION AND CARE OF THE HERD BOAR.

E. E. HENDERSON, CENTRAL CITY, IA.

When we received notice from your secretary that we had been assigned the above subject and requested that we prepare a paper for this meeting, it seemed to us that we had been given a very large subject. While this is a very old subject, and one upon which volumes have been written, it is always an interesting subject to the swine breeder. Most certainly the key to success in swine breeding lies in your ability to properly care for the brood sow and her litter, and in the selection and care of the herd boar. Down at Ames, Iowa, people boast of having a man who by teaching us the proper method in the selection and care of the seed and by his tireless energy and boundless enthusiasm has increased the corn crop of Iowa by millions of bushels. What we need now is a man who will teach us that uncounted thousands of bushels of this corn is worse than wasted by improper feeding methods, and it is safe to say that the brood sow gets a good share of this wasted food. After observing the method of feeding the brood sow on many farms we have come to the conclusion that corn is the principal, ad in far too many instances, the sole ration of the brood sow during the winter months, which are the very months that she needs proper food and care for the development of the young pigs. And another very common mistake is the starvation method, more commonly practiced than most of us are aware. The feeder (not breeder), finding his sows getting too fat on his corn ration cuts down the ration, thus starving the sow. This is a sure method of creating the "chicken eater" and the "cannibal sow." This manner of feeding invariably produces "poor luck" with pigs. We have always advocated liberal feeding of the brood sow. There is too much written advice given to the hog breeder about the danger of getting the brood sow too fat, and a very common and erroneous belief is that the brood sow must be kept in thin flesh. Our observation and advice is to feed liberally. Why starve the brood sow? Did you ever observe that all creatures that are about to produce young will lay on flesh rapidly if given the opportunity. We must not only feed the brood sow to save her litter but must also aim to have her in good flesh in order that she may be able to stand the excessive drain that the young litter calls for the first six weeks of their existence. In advising liberal feeding we wish to impress the feeder with the importance of corn, which should be fed in limited quantities. The main ration should consist of those foods rich in protein, such as oats and wheat middlings. Avoid a concentrated feed, but always use in connection other feeds to produce bulk to the ration, which is very essential to healthy digestive action. While many breeders depend upon the commercial feeds, such as shorts, middlings, tankage and others to produce a proper ration, we wish to state that it is not entirely a necessity to use these feeds to produce a balanced ration. Any Iowa farm will produce grass, oats, barley, clover, roots, etc., and while we think that perhaps in most instances it will pay the breeder to use these commercial feeds, we would advise against getting too much of a habit of using them.

We wish to emphasize the importance of exercise for the brood sow, and unless exercise is obtained results at best will be unsatisfactory. As a means of furnishing exercise a large pasture is one of the best as well as the most profitable adjuncts to successful swine raising. We say large pasture because we notice that on a good many farms the "hog pasture' consists of a two or three-acre lot, with perhaps thirty to sixty head of swine in same, and as a matter of course contains not a single square foot of grass. A very large per cent of swine raisers have yet to learn that grass is one of the best as well as most profitable feeds that we can grow for swine.

In selecting a brood sow select one with length and depth, with a docile disposition and the proper markings of the breed represented.

Much care and attention given to the brood sow before farrowing as well as afterwards is essential to success. The sow having had proper feed and care up to farrowing will have pigs like corn well planted—half raised. After farrowing do not get in too much of a hurry to feed the sow heavily, and if you have fed the sow with proper feed and have her in good flesh before farrowing, it will not be necessary to feed heavily at first, but bring up gradually to full feed about ten days after farrowing.

In the care of the litter each sow should have an individual pen. Always provide a dry, fresh bed, and the pens should be thoroughly cleaned and disinfected at least twice each week. The pigs when two to three weeks old should be provided with a separate feeding pen. Feed only in amounts that will be cleaned up in a short time. Fresh skim milk if to be obtained is an ideal feed for young pigs; also middlings, ground oats and soaked corn should comprise the young pig's chief rations. Ground oats should be sieved to remove the hulls. Young pigs up to ten weeks old can be fed a liberal amount of corn to advantage in connection with other feeds. After this age we would advise feeding corn in a limited quantity, but give a good grass range, provide an abundance of fresh water, also charcoal and ashes should be constantly accessible. Pigs should be dipped or sprayed frequently to keep them free from parasites and skin diseases.

The main object of the first five to seven months of the pig's age should be to promote bone and muscle growth. Whether the pigs be intended for market or for breeding stock, this will be found the most profitable method.

In the selection of the herd boar we wish to impress the buyer of the importance of early selection. Go to the breeder and make personal selection if possible. The boar should be obtained at least two months before he will be needed. Select a vigorous, healthy, well developed pig with every evidence of a good feeder and with the proper markings of the breed represented. Don't buy a boar just because he has a fine heart girth or perhaps has a fine ear, good bone and a good back or fine hams, but bear in mind that it is a combination of these good points that produce the pig that we want. We note the tendency of breeders to suddenly discover some weak point in their breed, and in their zeal to remedy this, neglect or lose sight of other just as essential points. Thus we have noted buyers in obtaining a sire that is extra strong in heart girth, and as he is aware that the breed at that time is deficient in this point he will buy the pig, whether he be good in other points or not. Thus the first thing we know we have a breed shaped like a wedge, this defect apparently being as suddenly discovered, and we all go after the other end of the pig. The point we wish to convey is: "Don't go to too great extremes in correcting deficient points in your pigs; thus, if your sows be too fine boned and you would have an extra large boned coarse sire, the chances are good that you would have as a result of this cross a very un-uniform lot of pigs.

Select a sire with good breeding, but require that he show evidence of this good breeding in his makeup. While we advise against placing too much dependence upon ancestry or the price that the sire or dam is sold for in your selection of the worth of a pig, we in nowise advise against the buyer considering the value of good breeding in ancestry; we must remember that the best of breeding does not always produce pigs suitable for breeding purposes. In the care of the sire place him by himself, away from your other pigs, if possible. If in doing this you find him inclined to be lazy and not take enough exercise, and with insufficient appetite, we would place a couple of small barrows in the lot with him. Feed liberally with an abundance of protein feeds, inducing growth, vigor and muscle building. Never turn him in with your sows. Don't abuse him; keep him gentle. When you get a good one don't sell him on the market and buy a new one every year. This we consider a great mistake and one that is very commonly practiced by the farmers in this State. In buying your herd boar remember that the sire is half of your herd, and don't let fifteen or twenty dollars prevent you from obtaining a good one.

No discussion followed the reading of Mr. Henderson's paper, Mr. Atkinson read the following paper:

SHOWING BARROWS AT THE INTERNATIONAL.

JAMES ATKINSON, EDITOR THE HOMESTEAD, DES MOINES, IA.

In looking into this subject I thought I could not do better than to make some inquiry among those who have had actual experience in exhibiting at the International Barrow Show. A Poland breeder who showed nine head last year states that although he won practically everything he competed for, yet the advertising value of his winnings was not, in his opinion, worth 10 per cent of what it would have been on breeding stock. He states that he is fitting nine head this year for the show, and also adds that he would not bother with them if he were not handy to Chicago, and if he did not feel reasonably sure that he would win enough to pay expenses. This exhibitor desires the reinstatement of the breeding classes, and states that no reputable breeder will ever come out with anything but second grade barrows at best, as nothing but seconds will ever be unsexed. This breeder is not sanguine over the possibilities of the barrow show, but believes that the number of entries will decrease and finally dwindle out altogether.

Another breeder expresses the diametrically opposite view to the one just quoted. Among other things he says:

"The International comes at a time when it would be a heavy damage to a herd of breeding hogs to put them in show condition, and, therefore, I think that those whose business it is to sell the breeding stock can well afford to take part in this show, because it brings out the hog in his finished state. The pork barrel is the thing that breeders should keep in view all the time, and a good barrow show held in connection with the International should demonstrate to the breeder what he should aim for. In my opinion breeders will not hesitate to unsex their best hogs for this show. I have found that the advertising I received at the International on account of showing barrows has done me more good as a breeder than showing at ten State fairs. In spite of the clamor for the breeding classes, I do not believe they will ever again be found at the International, as the danger of spreading disease is go great that our best breeders will never again be exhibitors. We must therefore settle down to the idea of having a barrow show or cut the hogs out altogether."

These men express the views of the two classes of swine breeders, and I take it for granted that this audience would take sides on the question much in the same way. The record associations up to date have not expressed a very strong desire to support the barrow show, and not until each breed is backed up by its association will this show ever become a pronounced success. The secretary of one of the large record associations has been earnestly at work to induce the board of directors to appropriate for this show, but up to date nothing has been done.

The American Berkshire Association has given the barrow shows strong support from the start, and this year is offering the sum of $235 in special premiums, while the secretary of the Yorkshire Association was authorized by the board of directors to appropriate the sum of $190. The Hampshire Association also appropriates annually to this show. These, I believe, are all the associations that so far have shown a disposition to encourage the barrow show. Athough there were thirty-four more barrows entered in 1905 than in 1904, yet I do not look for any substantial increase in the number of entries until all the large associations indorse this feature of the show by offering liberal premiums. It may reasonably be expected that the directors of the International Exposition will not increase their appropriations unless the associations make a showing. Unless all the breeds are strongly represented it cannot be expected that the barrow show will ever create much interest among breeders generally, or really do much for the benefit of the swine industry.

When one considers the magnitude of the swine industry in the corn belt it would seem as though there should be a great national show for the finished hog. At the same time, the swine breeder who undertakes to fit barrows for the International is handicapped materially compared with cattlemen. Usually those who exhibit steers also have entries in the pure-bred classes. This in the first place cuts the expense of putting the steer on exhibition as compared with the hog. In the second place, the man who is in attendance with some breeding cattle, and who also shows steers, gets much more effective advertising out of his venture. He has not only a double chance to win premium money, but has, in addition, an opportunity to make sales of pure-bred animals. If competition were keen in the various classes no man could expect his premium money to cover the bill of expense when barrows alone are shown, so that this really calls for sacrifice from the men who enter the contest. Whether it can be built up on this basis or not I hesitate to say.

Much might be accomplished by the holding of a barrow show to fix a desirable type within the breeds. With the right kind of judges to tie the ribbons it appears that a show of this kind might prove highly educational and go a long way towards settling the kind of finished hog demanded by the market. We are constantly battling over the makeup of the corn belt hog. Some are for the growthy, somewhat heavy boned, long bodied animal, while others through thick and thin stand for the early maturing, low down, somewhat fine boned individual. Of course the matter of prolificacy and constitutional vigor cannot be accurately determined by a judge who is passing on the finished animal, at the same time when it has been demonstrated what is the most desirable type on the market we believe that breeders can get togther in producing that type.

As stated before, I do not believe that the barrow show held in connection with the International will materially improve unless all the associations co-operate in putting up premium money. If this were done and then breeders failed to find it to their advantage to unsex some of their best breeding animals, the matter could be permanently dropped; but were it to die out of its own accord as it is run at present there would no doubt be intermittent revivals and much useless effort expended. According to present classifications the contests are largely within breeds, though of course for championship, individual or pen, the breeds come together. In this respect it is patterned after the steer classification. The object of the barrow show is not, as some believe, to demonstrate the superiority of one breed over another and thus annihilate all but one. There is no "superior" breed, nor there never can be one. It takes them all to gratify the tastes of all our people. At the same time the results of the International contests from year to year will prove a lamp to the feet of those who are starting up in business.

I doubt if any feature of the International would be more popular with visitors than an extensive barrow show, this for the reason that practically every visitor to the Fair is interested in one way or another in pure-bred hogs, inasmuch as nearly all stockmen use pure-bred males. This cannot be said of any other class of stock. The hog plays such an important part in paying the bills on practically every farm in the corn belt that few will fail not only to visit this department but to spend considerable time in making comparisons. A good barrow show in my opinion would have an educational value that would be second to no other feature of the great International.

Following the reading of Mr. Atkinson's paper, the discussion was participated in by Robt. Evans, W. B. Turner, R. J. Harding, and H. M. Yoder.

Mr. Yoder said: "Do you think that the ideal type of the barrow is the type for the breeder to breed from?"

Mr. Atkinson said: "Well, I think if the judge knows his business he can shed a good deal of light on the breeder's problem. I got a number of letters from exhibitors and one or two of them expressed the idea that you could take a second class hog and cover him with fat and cover up the defects. A thoroughly practical judge could throw a good deal of light upon the subject. It might go in the direction of the early maturing type and I am not sure but what that is possibly the right direction."

Mr. Evans said: "In regard to the classification, they have already sent out notices to the secretary of the association that unless their breed assists in the matter their association will be cut out."

Mr. Harding said: "I don't believe that any man would judge a breeding type of hog by a barrow because I have seen hogs that were really not first class hogs that when they were finished for market you could not tell it at all."

At the close of the discussion of this paper Mr. Benson read the following interesting paper:

DOES THE FARMER OR FEEDER DEMAND A STRONGER BONE AND BACK THAN IS PRODUCED BY THE BREEDER OF TODAY?

J. A. BENSON, PRIMGHAR, IA.

That no business men are more alive to the demands of their customers, or more skillful in supplying them, than the breeders of registered swine of today, is attested by the magnitude of the industry, its rapid increase and the appreciative prices he receives from the progressive farmer and feeder.

A few years ago the common or modest breeder feared to offer his product at auction to farmers and feeders only, and many high-class pigs were sold to head good herds at $20 to $25, even when pork was as high in the open market as now.

When he paid $50 for a brood sow, farmers thought he needed a guardian. Now farmers and breeders who do not record any hogs carry sales along at averages of $40 each for good offerings, and pay up to $80 and $90 for brood sows, and the breeder who thinks to get the good ones at low prices because only farmers are likely to be at the sale "reckons without his host."

Why is it often we hear no more of the prize winners? Farmers who do not advertise or record their stock often buy them and consign them to less conspicuous but not less useful lives. What do farmers and feeders demand?

Consult the advertisements of representative live stock journals and let us see what the breeder of today offers, and you will know.

Of twenty-one advertisements of swine in a leading weekly, only three mention bone or backs specifically.

Of forty-three in another weekly, well known among you, only five say anything of back or bone specifically.

In a leading monthly swine journal, one hundred twenty-five advertisements in one issue have only twenty-five calling attention to these very necessary and common points.

Is this because the breeder is afraid or unwilling to draw attention on account of weakness of bone or back? By no means. These points are today the strongest points in many herds, and I speak advisedly from actual observation of herds in their homes in eight States, besides exhibits at the greatest swine shows of the world and the Iowa State Fair every year since 1892, when I say to you that few breeders bring out mature animals weak in bone or back, and few such are retained in the herds.

Breeders have for years given to back and loin fourteen points out of one hundred, and to feet and legs ten points. Probably the back and loin approximate 14 per cent of the market value of the hog. The feet and legs if broken down mean much more than 10 per cent when the animal is thrown out as a cripple, but it is not the production of the breeder of today that supplies the cripples, chubs, fatties, rough packing or "skips and culls." It is the product of immature parents, dry yards and improper feeding. The result of parsimony in using good blood and good care.

I grant you the man who has swine weak in backs or bone decries the breeder's herd for lack, principally because he is too parsimonious to buy the better ones, too shiftless to take care of his own and too poor to enjoy another's success.

We will probably never all agree as to the best kind of hog to raise to suit our eye until all of us shall have the same preference in colors, shapes and size.

Among roses some of us prefer red, some white, some pink, and others yellow. Some will always wish for black or blue roses.

Convinced against his will, man is of the same opinion still. Markets have changed in the three-quarters of a century of the American swine industry.

We no longer need to drive our hogs to Cincinnati to market and slaughter them only in cold weather.

From demanding a strong, mature hog to get to market with a two years' crop of the wood lot and corn field, we now profit most by furnishing the quick growing, juicy pig, whose flesh has not been hardened by successive fasts, not increased in cost by a long maintenance ration, the risk of disease, the use of house room and capital invested.

The top lots of the market vary some in size, according to the good feeder and his preference, for the most successful feeders are not plently enough to be on the market every day, and one man's culls if well fed out and offered fat when most others are too thin, may top the market one day when much better ones sell lower on another day, but this sample day's market is fairly representative of what the market now demands.

The highest priced class is "Shipping and Select"—reaching the top price of $6.42 per hundred weight—was a lot of seventy-two head averaging 255 pounds, while the lowest in this class were a 200-pound lot and sold at $6.20 per hundred weight.

The average weight of this highest class of hogs being 225 pounds each, with an average price of $6.30 per hundred weight.

In the "heavy packing" class, determined not so much by their weight as by the age and quality, the top lot averaged 349 pounds and brought $6.10, which was 32 cents per hundred weight, or about 80 cents per head less than the top in shipping and select class.

A lot of sixty-five head that averaged 525 pounds in this heavy packing class sold at $5.80 per hundred weight, and a lot averaging 453 pounds brought only $5.50 per hundred weight, 92 cents per hundred weight, or $4.07 per head below top shipping and select.

In the light grade class $6.15 per hundred weight was the highest for a lot weighing 195 pounds.

Pigs and roughs, which are the lowest class, because of the immaturity and leanness of the one and the overmaturity and overproportion of waste, bone, etc., of the other, brought $2 to $5.75 per hundred weight, according to condition.

Years ago the Poland China was too large and coarse. I well remember my father's first Poland China, "Prince Bismarck," whose pedigree was written on a sheet of letter paper and signed by A. C. Moore before there was any record association or printed form. When he come to be slaughtered no hogshead could be found big enough in which to scald him, and he was wrapped in blankets saturated with scalding water till the hair would slip.

Then came the "ivory bones" Poland China, with very little bone, until the extreme fine bone was worse than the extremely coarse bone had been, especially on the prairies, with no wood lots for the hogs, and pastures inadequate by reason of high-priced fencing.

Now why the demand for a stronger bone and back if our breeders are producing hogs of 600 to 800 pounds each at maturity, with very few weighing less than 400 when mature and put in marketable flesh, when the market likes best a young hog of less than half the weight?

Is it because coarser bone or bigger joints indicate more vigor, activity, or response to good care? Does better bone mean more of it and a consequent lowering in price on foot? Does it promise better milking qualities in the sows or more sagacity and carefulness with their young? Does it indicate greater prolificness?

If you were looking for a milk cow, a vigorous horse or easy feeder in any animal line, would you select the heaviest bone? I prefer the medium bone, held tightly in place by strong muscles produced by a balanced ration, plenty of exercise and good breeding.

If by stronger back is meant a back more arched to sustain weight like the span of a steel bridge, I think the farmer and feeder are not demanding it. Any ordinary farm or feed lot will disclose too many backs whose one dimension is length and predominant quality is strength. Many of these can be made "stronger" on the market by laying on flesh with feed, but I note farmers at over five hundred breeders' sales I have attended and studied have a decided preference for wide, level backs over "fishbacks." Breeders and their customers are now on the right track mostly.

Take each your preferences, do your best with it, keep the best, for none are too good. Consign to the block every one weak in bone which may result in improper conditions. Don't let any narrow backed stock get away from your herd for breeding purposes. Attempt to supply the successful man, and don't change your herd and your plans because some unsuccessful one has time and energy to demand black or blue roses.

What kind of back should the beginning breeder produce? The wide, even back, as wide as shoulders and hams, full to a straight edge in loin and behind shoulders. The harmonious judgment of leading breeders and exhibitors as expressed in the score and detailed descriptions of the National Association of Expert Judges of Swine, and exemplified at leading shows, favors the level or slightly arched back. Note that the *level* back comes *before* the slightly arched back, and the "hoop" back is not commended. It is almost always a narrow one.

It is out of harmony with nature to have a short, strong foot and broad, short head on an extra long body. Choose which you will, remembering that it is not natural for the most rapid flesh formers at the same time with same feeds to be the heaviest milkers and most satisfactory mothers.

It is not necessary that we replace the present self-binder with the old, simple and stronger reaper to withstand the shocks of nigger heads in the *grain*. We can better remove the stones from the field.

We do not need stronger bone than the breeder of today produces, but rather a better chance to develop the great strength inherent in the pure bred swine of today.

Farmers and feeders not only demand stronger bone and backs than they themselves have, but are each year buying more and at better prices because they see breeders producing what they want.

Following the reading of Mr. Benson's paper remarks were made by L. H. Roberts and R. J. Harding.

Mr. Roberts said: "I think there has been a wrong impression for years in regard to this type of hog. The breeder ought to produce the type of hog that the farmer wants. We ought to produce the type of hog that fills the requirements of the packer. I understand it does not take a little short hog to do that. If he is long and even he fills that requirement just as well as the little short one. The reason is that nine-tenths of the farmers today, and a few breeders, will buy a type of hog and they can not hold that type because of vicious management and unwise feeding. That is why the farmer keeps the long type of hog—because he will eventually run to that. In order to develope the hog, I don't care how large so you keep the evenness of type. Not the great hog we had one time, but there is no one producing too large a type of hog, in my judgment. We want the bone that is hard, and care and management in feeding combined with breeding and blood."

Mr. Harding said. "I would like to say just a word on the subject and give my idea. I don't believe any breeder will cater to the demand of the market because the market changes just about as often as the moon. One week they want one kind and the next week another kind. Sometimes they will favor the coarse, lean things and other times they want the fat kind; sometimes they want them to weigh two hundred pounds and sometimes four. It is not the business of the breeder to cater to the notions of the packer, but to produce hogs there is the most profit in. I want size but there is a difference. There is a coarse ungainly kind of hog that gets immense size but he is out of shape. They are not even feeders and do not give as great returns for what we give. For myself I don't like extreme bone. I like the medium size. The extreme kind do not stand up as well, do not have as good feet and are not as serviceable, and I believe the part of the breeder is to notice these things and make their herds produce the best results. That is a breeder's business. There are lots of hog raisers that are not breeders and do not take any thought of these facts. We want to learn and that is what we are here for."

At the close of this discussion the secretary read the following paper by N. H. Gentry, of Sedalia, Mo.:

IS OUR PRESENT SYSTEM OF JUDGING, AS PRACTICED AT LEADING SHOWS, FOR THE BEST INTERESTS OF BREEDERS FROM THE STANDPOINT OF USEFULNESS?

N. H. GENTRY, SEDALIA, MO.

Whether to answer the subject assigned me in the negative or affirmative depends upon the judge. There are good judges and there are poor judges. Some make their work practical, because they are practical men; others less practical, given more to theory, grasping after the impossible, worshiping a "fad" or riding a "hobby," arrive at wrong conclusions. The latter is oftener the most confident he is right, self-satisfied in fact, sanctified almost in his opinion of self. The object of all shows is education, and the most important duty devolved upon the management of any show is to see that the awards are intelligently and faithfully and honestly made, because if not the main object of the undertaking miscarries and false ideals prevail. Even the taking of the money at the entrance gate is not of more importance than the selection of the right kind of men for judges. In the main I think all intelligently managed shows have good judges. I have never been one of those quickly to accuse a judge of dishonesty of purpose when in my opinion he made a mistake. I think such action on the part of an exhibitor a direct reflection upon his own character; because there was never a truer saying than that we judge others by ourselves. It is a common weakness. Any exhibitor can be a gentleman when he is winning. How very easy it is then, but the test as to whether he in person is as well bred as he claims for the stock he is exhibiting, namely, "thoroughbred," comes when he is suffering defeat. This is wandering from my subject, but I offer it as advice. The average beginner in the show ring needs such advice badly. I never look upon a new beginner in the show ring without experiencing a feeling of sympathy for him because, I know, sooner or later the severe test of how well bred he, himself—not the stock he is exhibiting—is, will try him sufficiently that his fellow competitors will soon place him to the level he really deserves.

But back more to my subject. In the main I would answer my subject in the affirmative. Some think too much encouragement is given to high fitting of breeding animals. I do not believe this. The well fitted animals show the possibilities of the breed as well as the skill of fitting, both of which are very instructive and do not necessarily mean barren animals. A well known and, in fact, the most successful firm of Shorthorn breeders in America, judged by the success of recent years—I refer to Robbins & Sons, of Indiana—have for a motto, "We breed our show cattle and show our breeding cattle." They have proven this to be true. I have never believed that intelligent fitting produced barren animals. I believe I have never fitted a Berkshire sow or boar that proved barren. We must not discourage the exhibiting of the best specimens possible of live stock. It is only by comparison that we judge an animal, good or bad. What is to one man a very fine specimen may be to another one of only ordinary quality because the latter has been taught in a higher school—that is, he has seen better individuals than has the other. If we are to reap the highest rewards and obtain the highest education possible, throw not a stone in the way of the exhibitor who can bring out the best possible exhibit, or especially in the way of the breeder who can breed and fit such. The undertaking is costly enough at best, and the man who can go to the top deserves every possible legitimate encouragement. Anything less savors of old fogyism and only encourages the hundreds who are either incompetent or haven't enough grit to try for the top to continually find fault with the efforts of the more aggressive and more progressive competitor.

In many cases where the awards of judges has not been for the interest of breeders, such decisions have been confined to the Poland Chinas. I say this in all honesty and free from any prejudice. Why the breeders of this widely disseminated and very popular breed of swine should have been troubled more by "fads" and "fancies" than others is hard to understand, but I believe few, if any, will dispute the fact. In some cases I have seen judges led away by this "fad," making his awards in the line of its dictations and to my mind overlooking the more important characteristics of a more profitable type of hog. I refer to the pretty, little, dumpling type, some of them apparently having a middle not longer than one's hand after the shoulder and ham comes off and lacking not only in length of body but in size, bone and vigor as well. No matter what the environments may be, I am a firm believer that the most practical, money-making hog must possess good size, ample bone, though not coarse, good length, retaining, of course, finish and quality. In fact, I am a firm believer in the long, even hog. Again I repeat that I believe the middle of the hog—from bottom to top—the ham not excepted, is the most valuable part of the hog.

I would not make you believe that I think all breeders and judges of Poland Chinas have yielded to this "fad" idea, but I believe enough have done so to lower the average quality of the breed in many instances at leading shows as well as over the country in general. I believe that the breeders of Poland Chinas, too, have oftener than those of other breeds sacrificed individual merit and run after certain lines of breeding made popular many times in the too distant past by certain noted animals to be worth much at the present time. This is a dangerous policy, to make individual merit second in consideration to anything else. A good individual first and then a good pedigree. The Berkshire of today is very much improved over the Berkshire of twenty or thirty years ago. We have increased his length, shortened his nose and added quality as well. We have had little of the "fad" idea to contend with. There has been some threatening of a "fad" for pug noses, but it has not gained much footing. While we like a short, broad, well dished face, few have gone to the extreme of advocating the really pug nose. There are, however, always those who would go to the extreme in any direction. The American people, I believe, are given to it in many cases, but luckily they, the extremists, are always in the minority. Even the Tamworth hog, lauded by some, notably the teachers at some of our agricultural colleges, as the ideal bacon hog, possessing, I might say, a monopoly in length of nose and leg and slimness of body to a degree that leaves him without a rival even in the person of the "razor-back," has his admirers. No matter how extremely false the idea, there seems to be those who embrace it with all the zeal known to human. If this type, so contradictory to all universally accepted ideals of profitable meat producing animals, is to be accepted as sound teaching, I do not see how we are to escape the undoing of all we have accomplished in the past hundreds of years in the building up of the most profitable type of meat producing animals. The thick fleshed, short legged bullock that ha s so long been our ideal, and which has furnished the choicest cuts of juicy, lean beef, as well as the well bred wether of like quality, will have to give way to the one of longer legs, longer head, thinner in flesh, if this idea is to prevail.

There being no discussion on this paper, Mr. Thompson presented the following:

MENDEL'S LAW AND ITS BEARING UPON PRACTICAL BREEDING OPERATIONS.

JOHN THOMPSON, SIOUX CITY, IA.

What is known as Mendel's law was discovered some forty-three years ago by an Austrian monk, Gregor Mendel, in the garden of his cloister. While Mendel gave his discovery to the scientific world through one of its organiations, he apparently failed to impress upon his listeners and the world in general the great scientific as well as the far reaching, practical value of his discovery. It was not until after the rediscovery of this law in 1900 by De Vries, Correns and Tachermak that scientific men began to realize its significance. In 1902 Bateson pointed out its wide application, and since that time it has received considerable study at the hands of both plant and animal breeders. So far as the law has been tested it has not been found wanting in any material sense of the word. Plant breeders have done so much more to test its validity than have breeders of animals, for the obvious reason that the difficulties in the way of attacking problems of that kind are much more easily overcome by the former than by the latter. So far practical breeders of live stock have taken very little notice of Mendel's law; in fact, I have heard men prominent in the breeding world, men who have made a success of their business, openly declare at meetings of this kind that they did not care to hear it discussed. While we all have the deepest respect for our fellowmen who have made a success of their life's tasks, and while I would be the last person to unjustly criticize another for his opinion, it would not be out of place to remind those who take such radical views with reference to new ideas that in spite of all success they may have attained, it is still possible that they may not know all about the laws of breeding. We should not be led astray by new theories; we should not accept facts of vital importance to our business and our personal welfare without thorough investigation, but on the other hand we should never close our ears or our eyes to things that are going on about us.

With these introductory remarks, let us inquire as to the nature of Mendel's law. What does it teach? In brief, it teaches that there is a principle underlying sexual reproduction in the organic world by means of which the breeder can with a degree of certainty foretell results at least to an extent never known before in its discovery. It includes at least three important principles: First, the principle of dominance; second, the purity of germ cells; and third, the principle or law of probability, which explains what we may expect from certain lines of breeding. All these factors must be fully understood before the law as a whole can be comprehended. With regard to the principle of dominance the law teaches that the different characteristics or characters of individuals, or of breeds, such as polled heads in certain cattle, special color markings, feeding qualities, early maturity, milk giving qualities, etc., are present as entities in the original germ cells from which all organic individuals spring; that these characters have different degrees of intensity, or in other words, that their powers of reproducing themselves vary.

In the past we have designated the power of an individual to impress its characters upon its offspring by the term "prepotency," which term, however, has stood for something that no one could clearly explain. Mendel's law explains prepotency so that it becomes intelligible to anybody. It has been called the law of dominance, and it teaches that when two animals of the same or of different breeds, with characters of different degrees of potentiality, are crossed, only one character of each character pair (the corresponding characters of male and female) asserts itself. The character that asserts itself is said to be dominant and the other recessive. In the first cross of two plants or of two animals, both the dominant and recessive characters are found side by side in the same germ cell of the hybrid or the offspring; but, as will be seen later, upon reaching maturity, this character pair separates, breaks up and the breeder may retain either the dominant or the recessive character, in accordance with his own wishes. In other words, the law assumes the purity of germ cells, which is its great underlying principle.

The significance of the purity of germ cells is this: Any hybrid, whatever its nature, produces mature germ cells which contain only one of the characters of its parents. In case the characters under consideration of the male and the female are of equal potency, which in practice would practically never be the case, the offspring would sometimes resemble one and sometimes the other parent, so far as the character pair under consideration is concerned. If, on the other hand, the character of one parent is dominant, it will manifest itself in the first cross, while the corresponding character of the other becomes recessive. For example: When a horned animal is crossed with a polled individual of the same or of a different breed the offspring will be uniformly polled, because the polled character is stronger than the horned character—in other words, it is dominant. It is customary to represent the dominant character by a capital and the recessive character by a small letter. From this it will be seen, if we let "p" represent the polled and "h" the horned character, that the offspring will be represented by ph. The germ cells ph of the hybrid are not able to maintain themselves as such; they do not seem to be stable, but segregate into individual germ cells or into their component parts—in this case, polled and horned. This segregation occurs in the egg and sperm cells alike, and in the pollen grains in the case of plants. So instead of having the character pair ph represented in the mature germ cell of the hybrid, we have the two separate characters, p and h (polled and horned), in separate germ cells; hence when the hybrids are interbred, we have two kinds of germ cells, of both the male and the female to deal with and to form possible combinations with each other. The egg cells contain either the p or the h characters and the sperm cells either of the same two characters. Suppose twenty egg cells containing both these characters are fertilized with twenty sperm cells containing the same characters, it is evident that we would have ten egg cells with p characters and ten with h characters; the same would be true of the sperm cells—there would be ten with p and ten with h characters. A sperm cell with a p character fused with an egg cell with the same character would produce offspring whose germ cells would contain only p characters, which offspring would, therefore, be a pure poll. It would also be possible for a sperm cell with an h character to unite with an egg cell of the same character, and the resulting offspring would produce germ cells with pure h characters and hence would be horned. But opportunity would also be afforded for the combinations of ph and hp to form, both of which would be alike and identical with the original hybrid.

From the above it will be seen that the polled hybrid is not capable of reproducing polled offspring in every instance, but a second generation cross between two like hybrids will produce three classes of animals, pure polls, hybrids like the parents, and pure horned individuals. Furthermore, the pure polls will constitute 25 per cent, the hybrids 50 per cent and the pure horned individuals 25 per cent of the total offspring. The pure polls, so far as the polled character is concerned, will remain pure forever afterwards. When bred to other pure polls the offspring will always be polled, or if they are bred to horned animals the offspring will be polled hybrids, the same as in the first instance. The horned individuals, on the other hand, of which 25 per cent were produced, will transmit the horned character to their offspring and never polled characters. The 50 per cent of hybrids will be further broken up if crossing is continued, as in the first instance and in the same proportion, namely, into one-fourth pure polls, one-half hybrids and one-fourth pure horned individuals. In this way it will be seen that from 100 crosses of polled hybrids the breeder may expect 25 pure polls, 50 hybrids and 25 with horns. It is to be understood that this is not mere theory, but has been proved to hold true in so many instances, both in the animal and the plant world, that there can be no doubt about its correctness as a general principle.

Dr. E. W. Gammon, of Sioux City, who is breeding polled Herefords at St. Charles, Iowa, told me a few days ago that both he and his uncle, Warren Gammon, the founder of the double standard polled Hereford breed, have observed that their results in breeding coincide very closely, indeed, with Mendel's law, and that they have found the law a great help to them in determining whether or not certain polled animals were pure polls or hybrids. I shall not recite more instances of this kind. Many might be cited from the experience of both plant and animal breeders in this country and abroad. Hays, Webber, Spillman and others in this country have found the law useful and have repeatedly urged breeders to become acquainted with it.

Those familiar with the laws of breeding as they are understood today know that there are exceptions to all of them. We say like produces like, but we all know that this is only true within certain bounds and that it is modified by laws of variation, atavism and correlation. Just as there are deviations in the first law of breeding, like produces like, so are there also deviations from Mendel's law of dominance, a fact that Mendel has always recognized. For example, in some cases the crossbred offspring acquires a character intermediate between those of either of its parents. Examples of that kind were observed by Mendel in crossing peas of different height. Again a certain character of the offspring may be intensified, as for instance, according to Mendel's observations, when a brown seeded variety of beans is crossed with a white seeded variety, the offspring produced seeds of a darker brown than those of the brown seeded parent. And still further, the offspring may acquire a character entirely different from that of either parent. For example, a cross between black and white spotted and albino mice produces offspring gray in color. Whether cases of that kind occur where a given character of one parent is distinctly dominant remains, so far as I know, to be proved. While, as indicated, the law of dominance does apparently not always assert itself, and while no one can tell beforehand what the result of a certain cross will be, if such a cross has never before been made, it should be borne in mind that the law is, nevertheless, positive and uniform in its action. If it has once been demonstrated what the result of a certain cross is, we may reasonably expect the same results in succeeding similar crosses. It has been said that an Augus bull is the greatest dehorner of a herd of cattle ever known. This is equivalent to saying that the polled character in Angus cattle, when they are crossed with horned cattle, is dominant and that we may always, to give a concrete example, expect a polled calf from a cross between a pure Angus poll and a Shorthorn cow.

Mendel's law, while it has given us much valuable information, will in no way change our methods of breeding. It does not change the laws that have heretofore been our guides—it simply adds to them; it is explanatory, so to speak, and enables us to understand and explain many things that heretofore were inexplicable and often served to discourage the breeder. It enables us to work with a definite idea in view and gives us assurance that a certain result can be reached if the plan is well laid and the work executed in accordance with the Mendelian principles. It has been said that Mendel's law will prove to be fundamental and that it will be of the same value in explaining heredity as the law of definite proportions is in explaining chemical changes.

Mr. Thompson's paper closed the program prepared for the meeting. Mr. J. J. Ferguson, representing Swift & Company, made the following general remarks:

I did not come out here to be heard so much as to hear, and before saying anything I want to tell you why I am here. Mr. L. F. Swift asked me to come and extend to the members of the Iowa Swine Breeders' Association an invitation to come next year to Sioux City for their meeting. We have fine stock yards and a well equipped packing house, and Mr. Swift thought we could make it very interesting to the members of the Association. It would do us good to get together, and we could arrange some practical demonstrations of standard types of the market hog, and I think our men could clear up some of the points about which you seem to be in doubt in regard to market types. I have been in the packing business now for four years. Down at St. Louis I was fortunate enough, or unfortunate enough, to be appointed judge of the market hog on all different breeds and classes, and I have to say that I don't think there is any more important subject in connection with swine breeding than the question of the market type and what the packer wants. The value of the hog depends upon current prices of the lard. The medium weight hog is selling from seven to seven and a quarter—just the relative position between a lard type hog and the bacon hog, which can be cut up and sold for eighteen to twenty-two cents per pound. Last Sunday I stayed with A. J. Lovejoy. We had bacon and eggs for breakfast. He paid twenty-five cents a pound for the bacon. What is the use of trying to stem the tide of popular opinion toward desirable ham and bacon when they are commanding such a price? We don't want lard today in the markets. We are getting all kinds of lard. We have all kinds of substitutes. People are being educated away from heavy fat. What is the kind of hog we want in the markets? Taking a fair average of the year right through, it is a trim, tidy, compact animal, not with light bone nor yet with the large heavy bone and the same conformation as you select for the head of your herd. We want the same as the breeder. Those things go together. We want a trim form with compactness and without patches of fat. A hundred and seventy-five pounds is a very desirable weight for the bacon type. Taking the average of the hogs at the Chicago yards last year, it was only 122 pounds; five years ago it was 245. That means a substantial reduction in the weight of hogs going to market. The kind of hog which will sell for the most money is a duplicate of the kind the packer will buy.

The invitation extended to the association by Mr. Ferguson to meet at Sioux City was not accepted, as the constitution provides that Des Moines shall be the meeting place.

This being a meeting devoted solely to the program there was no business transacted.

A committee on resolutions consisting of J. A. Benson, L. C. Reese, and H. F. Hoffman, reported the following:

RESOLUTIONS.

WHEREAS, We are permitted to assemble in prosperity and health, with a larger number of the pioneer members of this Association than usual, and

WHEREAS, We have been honored and instructed by the able gentlemen who have without exception filled their assignments on the program; therefore be it

Resolved, That we appreciate the benefit of thus mingling together; and be it further

Resolved, That we tender our thanks first to the untiring efforts of our officers, especially the Secretary, and to each one who has given of his labor and wealth of knowledge for our instruction and entertainment; and

Resolved, That we express our hearty approval of the interest and labor of Secretary J. C. Simpson in acquiring additional grounds for the State Fair in the interest of the swine department; that we have been loyal to the whole State Fair as any of its supporters, and we take pride in the magnificent permanent buildings secured for other departments of the Fair and renew our allegiance to the State Board of Agriculture and promise our hearty co-operation in securing for our department the commensurate sanitary and permanent quarters which our magnificent support through all the past forty years deserves at their hand. That we feel that we merit from the State Fair management more generous appropriations for the swine department for buildings for swine and exhibitors.

Resolved, That we heartily appreciate the activities of our committees in securing for our State Fair the most generous classification and liberal premiums offered at any State Fair. And further, be it

Resolved, That we commend the study and practice of the score card as an invaluable aid to prompt and accurate judgment and to its uniform terms of description in correspondence.

Resolved, That we also favor at the Iowa State Fair the two-judge system with a referee, to be called in only when the judges can not agree, the referee to decide without knowledge of said judges, opinion or instructions from them.

The resolutions were adopted.

The officers of the organization are. President, Wm. D. McTavish, Coggon, Iowa; Vice-Presidents, John M. Cox, Jr., Harlan, Iowa; J. A. Benson, Primghar, Iowa; Secretary and Treasurer, C. C. Carlin, Des Moines, Iowa; Executive Committee, B. R. Vale, Bonaparte, Iowa; W. E. Swallow, Waukee, Iowa; Harvey Johnson, Logan, Iowa. The annual election of officers takes place at the Iowa State Fair Grounds on Wednesday of fair week.

SCENE IN SWINE DEPARTMENT, IOWA STATE FAIR, 1906.

PART VII

PROCEEDINGS

OF THE

THIRTIETH ANNUAL MEETING

OF THE

Iowa State Dairy Association

HELD AT CEDAR RAPIDS, IOWA

November 7–8–9, 1906.

OFFICERS.

President—S. B. Shilling	Mason City
Vice President—W. B. Barney	Hampton
Secretary—W. B. Johnson	Des Moines
Treasurer—F. M. Brown	Cedar Rapids

The Iowa State Dairy Association met in annual session in the Auditorium at Cedar Rapids, November 7, 1906, at 8 o'clock P. M.

President S. B. Shilling in the chair.

Convention opened by invocation by Rev. Dr. Huggett.

ADDRESS OF WELCOME.

J. W. GOOD, CEDAR RAPIDS, IA.

Mr. President, Members of the Iowa State Dairy Association, Ladies and Gentlemen: It gives me pleasure to welcome you to our city. It is always a pleasure to our people to welcome in their midst organizations of men and women, but that pleasure is increased tonight by reason that we are welcoming here to our city representatives of one of the chief industries of our State.

Is it not too often a fact that we think our business and political life is made up of capitalists, of the trusts of big combinations of capital, of the captains of industry on the one side and of labor unions on the other? We forget that these are but the extremes of our business life, and between these two extremes is a great mass of business men of our country; we forget that between these two extremes stands the farmer, the business man, the professional man and the banker. We are welcoming in our midst tonight one of the organizations that represent this class of our business life, a class of men that are the very bone and sinew of our Nation's life.

I was surprised to read in the report of our State Dairy Commissioner that this State produces over one hundred and forty million pounds of butter annually, and if sold at 25 cents a pound would yield an income of thirty-five million dollars a year; that the dairies and creameries of Iowa produce of that amount over eighty-two million pounds of butter, yielding to them an income of over twenty million of dollars, and of that amount over seventeen million dollars' worth is annually shipped out of the State of Iowa. The high objects of your organization command not only our respect but our admiration. You have conducted this business so quietly, so skillfully, that we scarcely knew what you were doing.

I bring with me to you tonight not only the welcome of our people but I bring to you the well wishes of all our citizens. May your meeting be both pleasant and profitable; may you learn not only how you may increase the moisture of your butter but may you learn to increase your overrun. While this may not be profitable to the farmer, it may not be profitable to the consumer, yet we recognize the fact that you have taken hold of this proposition in a scientific way; you have lessened the labors of the farm and at the same time you have given a better product to the consumer, and we welcome you most heartily, most cordially, to our city. This building and two of the finest fireproof hotels in the West are at your service. The city is yours. We have come to look upon your coming here as almost an annual occurrence, and we trust that you will continue to come to Cedar Rapids. It shall be our duty—it shall be the duty of our citizens to see that your stay is both pleasant and profitable. Again I extend to you a most cordial and sincere welcome on behalf of all our people. I thank you.

W. E. Smith, Deputy Dairy and Food Commissioner, Des Moines, Iowa, responded to the address of welcome.

Piano solo by Miss Agnes Kouba, of Cedar Rapids, was encored.

THE PRESIDENT: The next on the program is the report of the secretary, Mr. W. B. Johnson. A little explanation is necessary because we cannot have that report this evening. The secretary shipped those documents from Des Moines on October 29th by express, and they have not arrived here as yet. The express company has sent a tracer after them and we hope to have this report to present to you at a later date, but it is a mistake for which nobody is really to blame and we are hoping to give you the report later.

We will now have the treasurer's report.

TREASURER'S REPORT, IOWA STATE DAIRY ASSOCIATION.

F. M. BROWN, TREASURER.

RECEIPTS, 1905.

Cash on hand	$1,090.48
Hunter, Walton Company	5.00
N. E. Westcott, Empire Cream Separator Company	25.00
J. B. Ford Company	10.00
Wells, Richardson Company	25.00
F. D. Moulton Company	15.00
Colonial Salt Company	15.00
Memberships	225.00
Davenport Ice Company	5.00
City of Cedar Rapids	300.00
P. H. Kieffer, balance on hand as former secretary	24.07
James Rowland & Co., sale of butter	958.90
Creamery Package Manufacturing Company	60.00
Waterloo Cream Separator Company	25.00
Gallagher Brothers	5.00
National Creamery Supply Company	35.00
J. G. Cherry Company	60.00
Monarch Refrigerator Company	10.00
E. Decker & Co.	5.00
Mower-Harwood Company	60.00
Elov Ericson	5.00
Lisbon Mutual Insurance Company	10.00
Sharpeles Separator Company	20.00
Fitch, Cornell & Co.	5.00
C. H. Weaver Company	5.00
Spurbeck, Lambert Company	5.00
Wells, Richardson & Co.	10.00
Pitt, Barnum & Co.	5.00
Edson Brothers	10.00
Pettit & Read	10.00
M. H. Fairchild & Bro.	5.00
Gude Brothers	10.00
Chris Hansen	5.00
Worcester Salt Company	15.00
O. Douglas	5.00
W. B. Barney & Co.	5.00
Crawford & Lehman	5.00
Diamond Crystal Salt Company	15.00
Wagner Glass Works	5.00
DeLaval Separator Company	40.00
Vermont Farm Machine Company	30.00
D. H. Barrell Company	10.00
Heller & Mers Co.	35.00
Northey Manufacturing Company	10.00
J. B. Ford Company	10.00
Iowa Dairy Separator Company	35.00
Interest on money on deposit	20.24
Interest on money on deposit	20.64
Total	$3,324.33

DISBURSEMENTS, 1905.

International Silver Company	$ 22.94
Geraghty & Co.	67.00
F. M. Brown, expense	3.85
S. B. Shilling, expense	14.50
W. B. Barney, expense	8.20
U. S. Express Company	65.79
American Express Company	26.30
Machinery Hall, expense	10.65
Freight on 1 tub butter	.25
Express on cups	.85
Boxing cups	.50
C. A. Calder, cartage	3.00
Passenger Agent	42.00
Prof. G. L. McKay, hotel	10.75
C. D. Smith, expense	47.50
W. E. Smith, hotel	10.75
W. J. Gillett	41.60
W. B. Barney, expense	6.70
Mary G. McGoorty	55.00
S. B. Shilling	5.68
C. D. Smith	4.50
Engrossing cups	1.50
P. H. Kieffer, expense	76.14
Republican Printing Company	14.50
H. D. Young, printing	22.00
F. L. Kimball estate	135.25
Jorgenson & Anderson Co.	25.00
Prof. C. F. Curtiss	10.00
F. M. Brown	2.00
P. H. Kieffer, pro rata fund	1,016.00
Prof. G. L. McKay	15.00
W. S. Smarzo, hotel	27.50
Exchange on check	.20
Miss Mary G. McGoorty	32.00
P. H. Kieffer, salary and postage	316.70
Exchange	.40
H. D. Young, printing	2.00
Cash on hand	1,179.83
Total	$3,324.33

On motion, duly seconded, the report of the treasurer was adopted as read.

THE PRESIDENT: A year ago at our meeting in this place you will remember that I had to stand here and make an excuse for a man, a man who has probably appeared before you oftener in the history of our organization than any person that has ever attended our meetings; I assured you at that time that the man was not to blame. I do not have to make an excuse for him tonight because he is here and I do not have to introduce him to you because you already know him. I have the pleasure of calling on Mr. Jules Lumbard for some music.

Mr. Lumbard sang "I Fear no Foe," "Rosebush," and, by request, the old Scotch serenade "Maggie," after which followed the president's address.

PRESIDENT'S ADDRESS.

S. B. SHILLING, MASON CITY, IA.

Ladies and Gentlemen: For the fourth time I have the pleasure of standing before you for the purpose of giving my annual address, and I find myself considerably at a loss to know just what to say to you. I have endeavored, upon former occasions, to fully cover the ground, and anything that I might say to you at this time must necessarily be more or less of a repetition of what I have already said to you before; I will promise you, therefore, that I will be very brief.

I trust that I will not be considered egotistical if I again, as upon former occasions, refer to our splendid financial condition as shown by the report of our Treasurer, to which you have just listened. If I were to bestow honor and praise where it properly belongs for this splendid showing, it would be on the butter makers of the State, and the generosity of the supply, and the commission firms throughout the country. They, appreciating our helpless condition in the fact that we have to rely wholly upon our own resources for the maintaining of our organization, have been indeed generous to us, for which we feel duly grateful.

It is with feelings of regret, I can assure you, that I am again forced to stand before you and acknowledge that, although there has been a session of our Legislature, our organization is still without the aid it so much stands in need of. It has been the one desire and ambition of my life to see our organization placed upon an equal footing with our sister States. We tried hard to accomplish this, but our appeals, as upon former occasions, fell upon deaf ears.

They made the excuse to us that the session was to be a short one, in the nature of aspecial session, made necessary by the change in the laws passed by the previous Legislature, and that no appropriations would be made other than what was absolutely necessary to pay the running expenses of the State government. I will leave it to your intelligence, without comment, as to whether they did this or not.

Defeat in this matter should only stimulate our determination to secure this in the end. With the opening of the next session of our Legislature, the dairymen should again be on hand with their bill. They must keep on agitating the question until the legislators, through the people, are made to understand that the dairy industry, the greatest wealth producing industry in this great State of ours, is entitled to consideration at their hands. That we will not be ignored; that our claim is a just one; that we are not asking for money to increase the salary of any one, but to pay the legitimate expenses of disseminating the knowledge of how to still further increase the profits from this industry.

The time to commence this fight is right *now*—now, when the Legislature is about to go into session. Pass a resolution at this meeting asking for this in a body—a body the largest of its kind of any like body in the State. Then, when you go home from here, make it a point to go and see your members of the Legislature and tell them what we want—what we are going to insist on; and, if possible, get him on record before he comes in contact with the influences that are opposing us.

But let us examine for a short time the claims the dairy industry has upon these legislators and the people; let us see if it is worthy of recognition. Let us see if its magnitude is great enough to entitle it to any special attention at the hands of our lawmaking body. According to the report of the Secretary of Agriculture, the greatest wealth producing crop we raise is corn, being valued at over $121,000,000 last year. The thanks and the eternal gratitude of the farmers of the State are due to the liberality of past Legislatures, whereby the Ames Agricultural College was made possible; and a Professor Holden was brought into the State, and furnished the funds to enable him to spread the doctrine of corn breeding and corn culture broadcast throughout the State. It would seem that the success attending the expenditure of money in this direction would be an incentive to the carrying on of like experiments in other lines, and that dairying, which promises so much, might be the recipient of this attention.

The next greatest crop we raise, in point of value, is our hay crop, valued at $41,500,000; then comes the oat crop, worth over $36,500,000; and then our dairy products, at over $30,000,000. The combined crops of wheat, barley, rye, flax and potatoes only equals in value about half the value of our dairy product. The egg values produced in the State is about $10,000,000; poultry, $8,000,000. The total value of the fruit and vegetable crops are over $9,000,000.

It can be seen by these figures how great, in comparison, is the dairy industry to other farm products, and what an important factor it is in the wealth production in our State. But the $30,000,000 does not represent the total income of the dairy industry by any means. We have over 1,315,000 cows in the State which annually give us over 1,315,000 calves, worth at least another $3,000,000. Then we have the by-products in the shape of skim milk and buttermilk, and at the price pork has been selling for during the past year, is easily worth one-sixth of the butter value, or $5,000,000, bringing the value of our dairy products up to over $38,000,000, exceeded in value by only two products—corn and hay.

Then, if it were possible for us to estimate the manurial value of the dairy cow to the fertility of our soil, and subtract from the corn crop the amount it owes to this fertility furnished by the dairy cow, we would find, without any juggling of figures, that dairying is the greatest wealth producing industry in the State; and it is this great wealth producing industry that has gone time and again to our Legislature and asked for the support to make it still greater, and have been refused.

I am pleased to inform you that there has been a gain in the quantity of butter made during the past year in the State; but whether there has been any gain in that so much desired direction of quality is another question. I believe, though, that progress is also being made in this as well as in quantity, but all who are familiar with the situation will agree with me that it is not to the extent that it should be.

The introduction of any new system, or the departure from any established custom, is bound to be attended by more or less confusion. The introduction of the hand separator and the centralizing creamery is causing a revolution in the manner of handling the raw material from the dairymen, and so far has resulted in materially lowering the quality of our butter. But while we may view this with regret, and even alarm, we must not fail to remember that the greatest good is always accomplished when the greatest number are benefited; and that the coming of these two factors, or institutions, has opened up a large area of our State to the possibilities of dairying that has heretofore been deprived of it, and that they are now adding materially to the wealth of the people and the State. While we may deprecate, and with good reason, some of their methods, we might also criticize some of the methods of the old and established individual and co-operative creameries.

There is one thing, in this relation, that I wish particularly to speak of at this time, and that is the practice of certain railroads making a rate to the centralizing creamery that encourages the shipping of the raw material out of the State, or, in other words, discriminating against certain cities in the State in favor of cities at a much greater distance in other States. I believe the practice to be wrong and pernicious in that it takes away—and gives credit to other States—that which properly belongs to Iowa. It is discriminating against a home manufacturer in favor of a foreign one, and is not in keeping with the principles of justice and right which should govern railroads or any other corporations; and I believe if the laws of the State will not reach and do away with this practice, the creameries would be justified, so far as possible, in refusing to do business with railroads engaging in this business.

We have just passed through a year of unprecedented prosperity in the dairy industry. Prices of dairy products have ruled higher than for many years past, and this in the face of the large losses made by dealers the year previous. A year ago we went into the winter season with a surplus of 76,000,000 pounds of butter in our storage warehouses. The quality of this, and the heavy production of fresh goods, proved ruinous to the holders of this butter, and it was freely predicted that as a result of these losses the price of butter for the coming year would rule low; but, in spite of all this, prices have ruled from three to five cents higher than for many years. We are going into the winter season again with a surplus in our storage warehouses of about 65,000,000 pounds, and an unprecedented demand, being nearly 15 per cent in excess of what it was a year ago.

These high prices of butter will undoubtedly attract more attention to this industry. Already we can see evidences of this in this large output; more and better cows are being kept, more attention is being paid to feeding, more silos are being built, and, upon the whole, the outlook gives every promise of continued prosperity in the industry.

I again trust I may not be considered egotistical if I refer, as I did a year ago, to the work of the National Dairy Union in suppressing the illegal sale of oleomargarine. We had never considered that our organization was formed for the purpose of enforcing any law; it was formed for the purpose of securing a law that would protect the dairymen in the right to sell his product for what it was. The law was secured, and you know the rest. You know of the benefits it has been to you. The beginning of the last fiscal year of the law saw a big increase in the output of oleomargarine, amounting to as much as 100 per cent increase over the same month of the preceding year. Complaints began to flow into our office of the illegal sale of the products; merchants in the outlying districts of Chicago came in, bringing samples of the product that their customers had been induced to buy for butter; their trade in butter was being ruined. The complaints became so urgent and frequent that we took the matter of the enforcement of the law up with the proper authorities, and in a way that the last six months of the year shows a 46 per cent decrease over the same months of the previous year, instead of the 100 per cent increase, as in the first six months. It also resulted in the sending of some of the worst and most persistent violators of the law to the penitentiary, and of making others refugees from the State; and the collection of thousands and thousands of dollars in fines; it has also resulted in driving the illegal sale of oleomargarine pretty well out of the city. Chicago is not the only city that has done this.

Today State Dairy Commissioner Washburn, of Missouri, backed by our organization, is making a fight to bring about the same condition of affairs in St. Louis. For six months he has been trying to bring some cases to trial, but so far without success. We must continue to assist him in this fight, and we must also continue to maintain our vigilant watch over the dairy industry for some time yet to come, for it has been the history of oleomargarine from its introduction up to the present time that, if left to itself, it has invariably found its way surreptiously into the channels of the butter trade.

There is one thing in this connection that I desire to call to your attention. You are all aware of the passage of our pure food laws and the provisions it contains; you are also aware that a committee was appointed, by our Secretary of Agriculture, to pass upon and establish food standards. This committee met a few weeks ago, and while they conceded the right of dairymen to use a harmless coloring matter, they failed to say what the nature and kind of the coloring matter might be, and referred the matter back to the Secretary of Agriculture, who depends for his information upon the chairman of this committee. This man is Dr. Wiley, Chief Chemist of the Agricultural Department at Washington, and his attitude during the past toward the dairymen has been very antagonistic. Now, whether there is anything in this or not we do not know, but so far we can see no good reason why the move was made, but just so long as this man is in a position where he has influence to make a ruling of any kind affecting the dairy interests, just so long will it be necessary for the dairymen to be on their guard and be ready to carry their case to a higher authority to obtain justice.

The greatest and most important question for us to consider today is how to improve the quality of our butter product. If every dairyman and buttermaker in the country thoroughly understood and appreciated just what it means to the future of their industry by the making and placing of poor butter upon the market, there would be a concerted movement from all sides to improve our present methods. I believe I have said to you before—I know I have made the statement many times over, and I want to make it again because I believe I am right—it is not now, nor never has been, a question of the quantity of butter we made, but a question of quality. Make the butter fine enough and there will never be an oversupply or a question of price.

I want to urge you to get together upon this question, formulate some plan or agreement looking to the doing away with poor raw material, and stick to it. I believe we would be justified in finding fault, to a certain degree, with the commission merchants in that they do not make the difference in the price that the quality warrants. I do not wish to be understood as saying they are not receiving enough money for the good butter, but I do wish to be understood as saying they are getting too much money for the poor. There is not the incentive for the production of good butter there should be.

In conclusion I want to say to the buttermakers: I can see no chance in the future for any reform movement that gives promise of success in improving the quality of our butter unless it comes from you. I believe that the responsibility for the future success of the dairy industry rests upon your shoulders; you have got to be more than a butter maker—you have got to be an instructor, a diplomat, a dictator—and you must fit yourselves to properly fill this position of trust and responsibility.

THE PRESIDENT: The next on our program is an address by our State Dairy Commissioner, Hon. H. R. Wright.

ADDRESS.

HON. H. R. WRIGHT, STATE DAIRY COMMISSIONER.

Mr. President, Ladies and Gentlemen: Now I am very much pleased with this kind reception because that is the first kind word I have had today. I was up at 2 o'clock this morning reading returns of election and I did not get a great deal of comfort out of that. Then I have had various other troubles today, and the last thing that happened to me was that Mr. Shilling made my speech—we evidently got hold of the same book. When I get through with my speech I want you to understand that the figures I gave were from the man that made the book. I am getting tired of this proposition of Sam making my speech, and I guess to get even with him I will tell you what a man told me about him. It is a conundrum: What kind of apple is Sam Shilling? The answer is a story. A fellow went to a hotel and ordered apple pie; he lifted up the cover of the pie and found two or three long hairs; he called the landlord and said, "Look at that." The landlord looked at it and said, "Now wouldn't that beat time? I bought them apples for Baldwins." I cannot help his making my speech, but I can do something to get even with him.

Like my friend Shilling, I wrote a speech several weeks ago, and if it were as good as I thought then I would read you every word of it. I looked at it last night and discovered it was not a very good speech and, after hearing Sam make it, I am convinced it was not. You know I have been at these State dairy conventions a good many years, and the first time they put me on I made a speech about dairy business, and all the good looking girls were there, but mighty few buttermakers; then I tried something else, and all the buttermakers were there and nobody I was making my speec to. Last year I said something about centralizers, and they were all there, so I thought tonight it might not be out of place to say something of the State in which we live and the people who make up her citizens.

Nature has been particularly kind to the 56,000 square miles embraced within the boundaries of this State. We live in the midst of the modern garden of Eden. A few small areas of the earth's surface are famed for abundance of peculiar productions, but no other spot is the equal of this State in diversity of abundance or in uniformity or capacity to produce. The rude aborigine knew this fact. He looked upon the quiet streams, the placid lakes, the sweeping prairies, the timbered valleys, the undulating hills; he contemplated the herds of buffalo and deer and the flocks of fowl that thrived here and furnished him subsistence; he was soothed to rest by the lullaby of summer breezes and roused to action by the sharper blasts of fall and winter; he saw the richness of autumn harvests and the beauties of spring; and in an ecstacy of contentment and satisfaction he unconsciously gave voice to that name dear to us all, Iowa, the beautiful land.

It was a beautiful land to him, but much more is it a beautiful land to us. Its forests of cornfields in richest green or more striking yellow; its wide prairies of timothy and blue-grass and clover and grains; its cattle on a thousand hills; its towns and railroads and factories; its homes and groves and comforts speak to us of nature's beauties and bounties that go to make up a State fit to be called IOWA. This State produces more corn, more cattle, more hogs, more butter, more poultry, more food products than any equal area on the face of the earth. Four hundred million dollars worth a year, $1,100,000 a day. The world turns to Iowa for something to eat and never yet has turned to us in vain. Let Iowa fail for a single year to produce a surplus and the civilized nations of the world would feel the lack. "Of all that is good, Iowa affords the best." Of all that is best Iowa produces the most.

Down East they say of us pityingly, "Iowa is an agricultural State." We ought to thank God that it is so. Times are always better here than elsewhere because our crops are so varied in character and so uniformly abundant in quantity that our prosperity is continuous. The Iowa farmer does not depend on a single crop, but if he did his soil and climate and rainfall are certain to be about what he desires. States west of us have had to pass the hat when single crops have failed. Iowa never had a crop failure. Earthquakes and conflagrations, famine and pestilence and pests, political corruption and bad government have afflicted other lands and other States, but none of these things come nigh to Iowa. Other States have been afflicted with strikes and lockouts and hungry citizens looking in vain for work. The Iowa farmer is profitably employed all the time, and his living and comfort are certain, for the sole reason that Iowa is a real agricultural State, and her welfare is perpetually insured by nature's deposits of richness in her soil and by nature's perpetual favoritism of climate.

And so the farmer is rich and the whole State is rich because of him. He has money and he spends it, and the whole State prospers with him. He's rich in fine horses and fat cattle and sheep and hogs; he's rich in bank accounts and the comforts of life; he's rich in privileges of church and school for his family; he's near to towns and railroads and colleges and music and books and social enjoyment. The farmers of Iowa live in better houses, have better farm buildings, and better stock on their farms, have more labor saving machinery and more ease and enjoyment in life than the farmers of any other State or country or time. Fifty years ago the rich lived not half so well as the average farmer in Iowa. The one crop farmer of the far West or North lives in constant fear of crop failure or low prices that means for him real or relative ruin. The welfare of the southern farmer depends upon the price and crop of cotton. The farmer of our eastern States has a soil less productive and more refractory. The oriental farmer lives with certain famine just ahead of him. The farmer of continental Europe is either a grasping landlord or a cringing peasant. When the travelers tell them of Iowa farmers with their broad acres and herds of stock and comforts of life and luxuries of existence, the European farmer is incredulous and exclaims, "These are not farmers, but princes you describe."

There are in Iowa 210,000 farms, and on these farms there live 51 per cent of the people of the State, 1,130,000 persons. Of these, 320,000, or about two out of every seven, are classed as workers by the census taker. These 320,000 workers produce a value every day of the year, Sundays included, of more than a million dollars, a sum of money equal to one dollar every day in the year for every man, woman and child that lives on the farms of this State. That is to say, the worker on the farms of the State of Iowa produces a value of between three dollars and three dollars and a half every day, not counting out the Sundays. Is it any wonder that the wealth of Iowa's farmers is proverbial?

Two-thirds of the farms of Iowa are occupied by the owners of them, and everybody knows that these farms are above the average for the State. Consider the condition of this average farmer in Iowa living on his own farm. By the aid of a single helper he produces a value of $7 every day of the year. His farm is a little less than 160 acres. He and his family live in the midst of opulence, good health, and plenty to eat. He produces a large part of his living and lives cheaper than any other man can do. Unlike the European farmer, he eats the best and sells the rest. Sit down to dinner with this Iowa average farmer. His own farm and his own work have produced the beef and pork and chicken, the potatoes, and the bread, the butter, and the milk and the cream, the vegetables and the fruit of a dozen varieties. If his products are as varied as they may be he has raised on his Iowa farm all that he has on his table except tropical fruits, tea, coffee and spices. He lives in the midst of an independence unequalled by any class of men anywhere. His income is large. His expenses are small, and he's rich in all that is best in this life, money, lands, independence, contentment and self-respect.

This convention represents only one of the great agricultural industries of this magnificent home of ours. The men here represent more or less directly an industry that touches three-fourths of the farms and the farmers of this State, that has invested in it 1,500,000 cows, and lands to graze them and barns to shelter them. They represent directly and immediately the second greatest manufacturing industry of the State, comprising 650 creameries and a capital of $4,000,000, that gives employment directly to 1,400 men and indirectly to many more, that furnishes a product that has a value of $20,000,000. The dairy interest of this State here represented counts its annual product in creamery butter, dairy butter, cheese, by-products of skimmed milk and buttermilk of a value of nearly or quite $40,000,000, 10 per cent of the whole agricultural products of the State, an still is less than the cattle or hogs or corn we produce, and is nearly equalled by several other lines of the Iowa farmers' industry. The cows of this State produce an annual value that would pay for themselves, replace the capital invested in creameries and pay the wages of the buttermakers of the State. The men of this convention pin their faith to the dairy cow and the creamery, and their faith is shared by 90,000 creamery patrons and their families.

But rich as the Iowa farmer is in material things, he is richer still in opportunity. The generation before us came to this virgin soil with simple tools and little agricultural knowledge. In spite of this handicap success of a brilliant character has been attained. But this is an era of scientific investigation of cause and effect in agriculture. The generation before ours was distinguished by success achieved by physical industry that meant long hours for the team and the farmer and hired man. The present generation of farmers is distinguished by the same kind of industry coupled with more of knowledge of how to make that work effective. We do better than our fathers did. The next generation will be distinguished for not less of proper physical effort but for vastly more of the "know how" than were their fathers or their grandfathers. This speaker is not the first to note an enormous increase of interest in scientific agriculture during the last five years, the agriculture that is based upon applied brains, the agriculture that combines hard work with hard common sense and scientific information. The number of farm papers taken has lately quadrupled; the efficiency of our agricultural schools has increased by leaps and bounds. The extraordinary interest in conventions such as this indicates simply that the farmers of this State are determined to know all that anybody knows about the most successful ways to handle Iowa's agricultural problems, that they are determined to find out all that can be found out in regard to Iowa's resources and how best to take advantage of them. The farmer reads the crop reports and finds that the average production of corn is but 34 bushels per acre; he wants to know how to make this average 60 bushels, and he is going to know and to put in practice his knowledge. The dairy commissioner's report tells him that the cows of the State produce but 140 pounds of butter each per annum; he wants to know how to make this 240 pounds, and he is going to achieve that increase. He knows that the present low averages have made him rich. He is properly proud of his achievements, but is not so taken up with boasting as not to see the possibilities that lie ahead of him or his sons who will take his place. He is progressive and strives for better things, and he and his sons will achieve them.

The rude aborigine looked upon this State and called it Iowa, the beautiful land. He was proud of his home, and boasted its superiority. With greater knowledge and wider vision we echo the name and the sentiment, and we, too, boast with proper pride of our superiority over those less favored by nature. Those who come after us with greater knowledge of how to unlock Nature's storehouse, with wiser minds, with more of patience and intelligent industry, will get more for their efforts than we do for ours. They, too, will look back to this generation and its magnificent achievements; they, too, will look with pride upon their own greater and better achievements. They, too, with ourselves and the savage, will be glad to live in the State of which we are so proud; and thinking then of the reasons for their riches, their prosperity, their happiness and contentment they, too, will exclaim, as we do and as did the Indian who gave this State its name, Iowa, meaning beautiful land.

Miss Marie Jones, of Cedar Rapids, sang a lullaby, which was roundly applauded.

THE PRESIDENT: We are favored this evening by the presence of the State Dairy Commissioner of Minnesota, about whom we hear so much, and I have no doubt you would like to hear from him a few minutes. I have the pleasure of introducing to you Mr. E. K. Slater, of Minnesota.

REMARKS.

HON. E. K. SLATER, DAIRY AND FOOD COMMISSIONER, ST. PAUL, MINN.

Mr. President, Ladies and Gentlemen of the Convention: You remember the history of the battle of Gettysburg when the immortal Lincoln prepared his speech upon the back of an old envelope while waiting to be called on for his address. Now I do not believe this speech will go thundering down the ages, but it is on the back of an old envelope. I did not intend to make a speech and I would not have been called on if it had not been the desire of your President to get even with me. I tried to get him into the same sort of scrape at Minneapolis, and I hate to announce to you that he did not make good; he backed down and would not make a speech.

We have always thought that we had a pretty good State over in Minnesota, and I don't know but I have found out this evening why it is a good State, as good as it is, and it must be because we are so close to Iowa, judging from what we have heard about Iowa here this evening.

I want to bring to you the greetings of the Minnesota buttermakers and dairymen, and I am glad to assure you dairymen of Iowa that the feeling of the Minnesota buttermakers, especially, because I know more of them than I do of the dairymen, the feeling of the buttermakers of Minnesota towards the buttermakers of the State of Iowa was never better than it is today. I do not know why that is true except perhaps because they admire good losers. The boys up there are going to keep right on trying, and they want you to keep right in the race. I want to tell you that any banners Minnesota buttermakers lose to the buttermakers of any other State we would just a little rather see go to Iowa than anywhere else. I hope you will do something to get them; we will keep right on trying ourselves, but if we cannot land them let's see them come to Iowa.

The story of the Baldwin apples reminds me of a story I heard the other day. A man in referring to a bald headed man as a self-made man was wondering, as long as he made himself, why he did not put a little more hair on his head. Now I might have turned that around and applied it to your President, but I am not mean enough to do that.

If I were to attempt to make you a speech it would be so garbled up that it would mean about as much to you as the remarks of a German barber when a patron came to his shop, got partly shaved, and noticing a friend going by the door he jumped up and ran out, and while he was gone another man got into the chair. When he came in he was very much exercised about the proceedings and, getting badly worked up, he said to the barber, "When a man comes in and goes out, has he went?" The barber scratched his head and wondered a minute and said, "He was but he ain't." You will get as much sense out of that as a speech I would try to make to you Iowa buttermakers without preparation, that is, an extended one. I have a speech I wrote one time but never delivered it; I got part way through it at a convention in Minnesota and the reception it got convinced me that I had better never try to finish it, so I got out of the idea of trying to prepare my speeches at all.

I am not going to take up your time; if you want to get out of this hall as badly as I do you will want me to cut off short, but I do want to emphasize what President Shilling has said here tonight in regard to this quality question. That applies just as much to Iowa buttermakers and dairymen as it does to other States, and I say it with as much sincerity to your people in Iowa as I would say it in speaking to my own dairymen, that is the quality question. Your president has told you we have to do something, and he has further said that it lays with you butter-makers to take the initiative and push this improvement along. You take a buttermaker and put him in an average creamery, if he stays there long enough will build up or burst up that creamery. Just that much responsibility rests on the shoulders of the buttermaker.

We have many good buttermakers in Minnesota, you have many good buttermakers in Iowa. We have a lot of poor buttermakers in Minnesota, and I think you must have a few in Iowa. I think I will be safe in betting on that proposition. If every buttermaker in the State of Iowa will just try to do a little more to improve the quality of the product he is turning out at his factory, there will be the solution of the whole trouble. Now how is he going at it? Not only by trying to manufacture the raw material into the finished product in the most scientific manner, but he must go out and work with the farmers and try to get better raw material. At the present time we have not much to put up to the farmer in the way of argument as long as poor butter sells for the price it does.

That is why I felt like saying "Amen" when Mr. Sshilling said poor butter was drawing too high a price. If we could get the price down where we could show the farmer we had to have good raw material in order to get a good price for the butter, then we would have something to touch his pocket with; but in the absence of that it is up to the buttermaker to work among his patrons. I have heard buttermakers say they could not do this; their patrons would resent it. The good buttermaker that gains the confidence of his patron can do almost anything with him; he can keep him from shipping cream to the sanitary plants.

I am not going to try and discuss that question, because if I did I would not catch my train at 10:45, but you know as well as I do that a good buttermaker is the moving spirit in a creamery community, and if the buttermakers of Iowa want to know how they can handle this quality question, that is the answer right there. Let every buttermaker get busy with his own patrons. You say that is easier said than done. I admit that you cannot do it all at once, but a little improvement each month with what has been accomplished in the month past, and carried on, is just what will solve the trouble. Now it is well enough to ask for State help and all that sort of thing. The creamery inspector contributes to the quality of the butter, no doubt about that; but I want to tell you where the inspection is carried on regularly (and I am referring now to my own State), that the buttermakers get into the habit of depending too much upon the creamery inspector. They do not have backbone enough themselves. I know that I am saying some pretty severe things to the buttermakers, but I have been there myself and I know that he needs them. You may take that as a confession if you want to. It lays with the buttermaker what is in the creamery, and I don't know as I can enlarge upon it, but I would like to make it stronger if I had the words to express myself; but if you go away from here and feel like trying to remember anything that the fellow from Minnesota said, remember that it is up to you as buttermakers of Iowa to take hold of this quality question and improve the quality of Iowa butter.

Now I am not going to take up any more time. I am glad to have had the privilege of meeting with you, and I want to assure you again that the Minnesota buttermakers have the kindliest of feelings towards you Iowa fellows, and those of you who have come up to our conventions (and there have been many of you there and have contributed to the success of those conventions) have always been treated right, and I am sure that the Minnesota boys can say the same thing, those that have been down here to your convention. I wish you a successful meeting and a happy solution of this troublesome quality question.

THURSDAY MORNING.

November 8, 1906.

Meeting called to order at 11 o'clock by President Shilling.

THE PRESIDENT: I have two communications to read at this time, which are as follows:

Fort Dodge, Ia., Nov. 5, 1906.

Mr. S. H. Thompson, City:

Dear Sir—Enclosed you will find an invitation to the chairman of the next place of meeting committee in the Buttermakers' Convention, which meets in Cedar Rapids this week.

This invitation is extended by the Commercial Club for them to hold their next meeting here, and we would give them for their use the armory, which we believe would be very suitable for their needs. We could also furnish them with some music by the band and otherwise entertain and make pleasant their stay. Hoping you will be successful in landing the next meeting, I am, with cordial personal regards, very truly,

JAMES E. DOWNING, *Secretary.*

Fort Dodge, Ia., Nov. 5, 1906.

Chairman Next Meeting Place Committee:

Dear Sir—The Fort Dodge Commercial Club extends an invitation to the Buttermakers to hold their next meeting in Fort Dodge.

We have one of the most suitable buildings in the State for holding the meeting, and will be pleased to do everything we can to make the meeting profitable and pleasant.

The armory of the Fifty-sixth Regiment Band, which we would ask to be accepted, is a new brick structure 140 by 60 feet, two stories high. The main floor space is 100 feet long by 60 feet wide, with a gallery running around the second floor which will seat 400 people. On the first floor in addition to the large main floor are four committee rooms, closets, telephones and other conveniences. The entire building is lighted by gas and electricity.

The famous Fifty-sixth Regiment band can be utilized if necessary, and such other means of making the meeting successful will be provided if within our power. Thanking you for giving Fort Dodge your earnest consideration, I am, very truly,

JAMES E. DOWNING, *Secretary.*

Des Moines, Ia., Nov. 3, 1906.

Officers and Members of the Iowa State Dairy Association, Cedar Rapids, Iowa:

Gentlemen—The Commercial Club and the Greater Des Moines Committee send greetings and congratulations to the Iowa State Dairy Association, in convention assembled.

It would please the Capital City and all of its great interests to entertain the convention next year.

Mr. F. A. Leighton, the bearer of this message, is a member of this club and is fully authorized to extend the invitation in our name. We have requested him to represent us and make a plea for Des Moines. He is authorized to pledge in our name the usual courtesies.

Wishing your great and important convention the best meeting in its history, I have the honor to subscribe myself, yours very respectfully,

MILO WARD, *Secretary.*

F. A. LEIGHTON, Des Moines—Mr. President, Ladies and Gentlemen: I am authorized by the Commercial Club of Des Moines to offer this association as much money and as much entertainment as any city in Iowa for 1907. We will see that you are well taken care of, and this Commercial Club appointed a committee composed of Messrs. Berry, Nettles, Parker, Sharp and Wentworth to help solicit this convention, and I am going to turn this matter over to Mr. Wentworth.

MR. WENTWORTH—Mr. President and Members of the Convention: This, as you well know, is a matter the settlement of which rightly devolves upon your executive committee. The members of an organization such as the Iowa State Dairy Association seldom bother with detail as regards meeting places, or things of that kind, and delegate those duties to an executive committee, but at the same time when the Commercial Club broached this matter through one of its members, Mr. Leighton, about securing this great association to meet in their city, I promised to help. I wish to state, gentlemen, that in the entire history of the association you have never met in Des Moines. They have entertained politicians and have entertained ministers and are getting to have quite an appetite for conventions, they want to entertain some of the *real* people in the future, and for that reason they desire to have the Iowa State Dairy Association meet with them the coming year.

Des Moines has been just a little bit backward, in years gone by "doing things." You will find that is a fault that comes to cities or peoples accustomed to having things handed to them. They have watched the work of the other cities in the State and have a desire to emulate all the good things done for this association by the other cities, and will endeavor to "go one better."

The Commercial Club, and in the broad general sense the citizens of Des Moines, are feeling those quickening pains that precedes a new birth, a new birth of fraternity. They want to get just a little closer to the people of the State and live down the reputation that is very far reaching (and I am frank to confess, gentlemen, that they have felt it), that everything naturally belongs to them because of their size and their political influence. Now they pursue everything that anybody else does and they would be mighty glad to entertain each and everyone of you and all of your friends at the next convention. They have a plan if you do come that strikes me as being ideal and that is making an arrangement with the North-Western road (and I am sorry that Mr. Berry, a member of this committee, is not here; but it is a little early to say anything definite on that point) to get a special train and devote one day to the college at Ames. They figure that the educational advantages that the members of this association would thus receive would be very great, and the nearness of the capital city to Ames (I put it that way because as a loyal citizen of Iowa I feel that everything should center around that great institution at Ames) makes the plan feasible and thus associated and allied, it would make this the greatest convention we ever had, without disparaging any convention that has ever been held in any city.

This, as I stated before, is to be left to your executive committee, but I feel that it is their desire to do what the majority of this association would want to have done, and to decide on the place for this association to meet the coming year wherever it would be most convenient for you all. I believe it is a fact that Des Moines is pretty nearly the center of the State and more easily accessible than any other city in the State for all of its interests.

MR. WENTWORTH: Mr. Chairman, I move that this communication and address be referred to the executive committee for proper action.

Motion seconded and carried.

THE PRESIDENT: I will now read a telegram received from Mr. C. Y. Knight, secretary-treasurer of the National Dairy Union:

S. B. Shilling, Cedar, Rapids, Ia.:

Wadsworth beaten in New York on oleomargarine issue.

(Signed) C. Y. KNIGHT.

ELECTION OF OFFICERS.

The following officers of the association were elected for the ensuing year:

President—W. B. Barney, Hampton, Iowa.
Vice-President—L. S. Edwards, Arlington, Iowa.
Secretary—W. B. Johnson, Des Moines, Iowa.
Treasurer—F. M. Brown, Cedar Rapids, Iowa.

THE PRESIDENT: I told you last evening I would appoint committees at this time. I will appoint two, but will have to crave your indulgence for the appointment of the executive committee.

Resolutions Committee: H. J. Neitert, Walker; F. A. Leighton, Des Moines; J. J. Brunner, Charles City.

Auditing Committee: Fred Mack, Waterloo; Chas. Middlestadt, Ryan; DeWitt Goodrich, Goldfield.

PREPARING AND HANDLING OF STARTER.

L. S. EDWARDS, ARLINGTON, IA.

Owing to the limited time we have fo rpapers and discussions at our conventions, I have endeavored to prepare my paper accordingly and shall take but little of your time.

That the use of a commercial starter is beyond the experimental stage is no longer questioned, and the buttermaker who is not using a commercial starter today is certainly not up to date and should wake up and join the procession.

With the demand for fresh, sweet cream and the rejection of old, sour, stale cream by the gathered cream plants, comes a greater demand for a starter, and the day is not far off when these people will be looking after and offering handsome salaries for the buttermaker who can and will produce a fine uniform starter every day.

There is a constant and growing demand for a better and more uniform quality of butter, and there is nothing that will serve to supply this demand quicker or better than more good commercial starter, and in my opinion it will never be done without it. Consequently good commercial starter must and shall take the place of old sour cream in the cream ripeners. So let us be awake to the situation and when the demand comes for more and better starters be prepared to produce them.

I shall now endeavor to give you a few points of preparing a starter. It is quite necessary that we carry one or more small "mother cultures" along in glass jars besides the ones in the large can. This becomes necessary for several reasons. In the first place, having only a small quantity we are able to handle it in a more sanitary way and are also able to control the temperature much better than it is possible to do in the large can. Again, we have two, or as many as we prefer, to carry to choose from, and then not having to depend entirely on one jar. Some prefer stone jars for carrying the mother culture in and, true enough, they have some good points in their favor, as you can apply the steam direct for sterilizing and they are not nearly so apt to get broken. But on the other hand they are harder to keep clean, and you are more likely to leave them dirty since you cannot see any remaining filth that may be left in them as you can in the glass jars. Another very important point in favor of the glass jars is you are able to see the condition of the curd and thereby have a better idea of the condition of your culture. For sterilizing the glass jars, drop them into a pail of water and boil for a few minutes, and I think you will find this very satisfactory.

Someone has said of man, "We are a part of all we meet." How strikingly true this is of a starter; they also are a part of all they meet, whether it be in the surrounding atmosphere or in the vessels in which they are carried, or if it be from dirty water dripping from wet hands. A drop of water contains millions of bacteria, and the hands should always be clean and dry when handling a starter.

Therefore the greatest possible care should always be taken not to allow the milk to come in contact with any other than lactic acid bacteria.

SELECTING MILK FOR MOTHER CULTURE.

This is a very important part and nothing but the very best morning's milk should be used. Pasteurize it separately and carry it altogether separate from the large starter. And I wish to say here that if you have never experimented with different patrons' milk and compared the flavor obtained from them after having been inoculated with the same culture and set at the same temperature, you will certainly be surprised. I have been conducting these and other experiments for the past year and find it next to impossible to obtain the same flavor from milk from two different herds. You may perhaps get two good starters, but there will always be a noticeable difference in the flavor of the two cultures. Then again, I have herds that I have not as yet been able to get a good culture from their milk. But if you will take two jars of the same milk and inoculate each with a bottle of the same culture and hold at an even temperature you will seldom be able to tell one jar from the other by the difference in flavor.

In these experiments I have used four of the leading brands of commercial culture and have proven to my own satisfaction that manufacturers of our commercial culture are to be congratulated on the uniformity and reliability of their culture.

It is well worth your time and trouble to carry on some of these inexpensive experiments, as it will assist you greatly in being able to know how to secure the best culture and familiarize yourself and know a good culture when you have one.

Milk for the starter should be pasteurized to 200 degrees Fahrenheit or thereabouts, and should be held at this temperature not less than thirty minutes and then cooled to the desired temperature for setting.

For the large starter about the same method may be used except the skim milk as it comes from the separator is preferable, if it is in good condition, as it is better to skim the top of the starter off, after it has coagulated, for in so doing you have taken out of the starter all of the undesirable bacteria that may have dropped in from the top, and if whole milk be used you will necessarily have to skim off the cream, and this would be lost.

In pasteurizing, the heating and cooling should always be done as quickly as possible, as the quick changes in temperature is much more effective in destroying bacteria.

We are now ready for the inoculation, and the time of the inoculation depends upon the temperature at which you prefer to ripen your starter and the time at which you expect to have it ripe. Since the lactic acid bacteria seems to work most satisfactorily at from 70 to 75 degrees Fahrenheit, this is the temperature in general use, and at this temperature you will need to use about 10 per cent mother culture, which you have prepared and ripened the day before, to ripen starter in six or eight hours, and for the mother culture, which can be cooled down very early in the evening, this method is perhaps the most satisfactory one. But for the large can where there is no satisfactory way for cooling quickly a better plan is to use from 2 to 5 per cent of culture, allowing the starter to be quite thick in the morning when ready to put in cream.

Before a culture or starter is used it should be poured from one vessel to another, or stirred with the stirring device until it is very smooth and of the same consistency all through, otherwise there will be bacteria in the lump of curd which will not come in contact with the fresh milk, but will become overripe and will cause the starter to whey off more easily, and at the same time with the small per cent of inoculation as in the large can there is apt to be milk which does not become inoculated and you will have a very uneven curd. For the same reason cultures and starters should be shaken several times during the ripening process.

If you wish a mild, creamy flavor, ripen starter at a high temperature; but if you prefer a sharper, more acid flavor, ripen at a lower temperature.

Either of the above methods require very close attention, for in ripening at a high temperature the starter must be cooled down just at the proper time, otherwise it will become overripe very quickly, and in ripening at a low temperature you have the bitter flavor to fight and the possibility of your starter not being coagulated at the proper time, and under no consideration should we use a starter that is not thick. In a case of this kind and at other times when the starter does not show up as it should, and this will happen to the best of them sometimes, it is advisable to use a buttermilk starter. However, this should not be repeated and should only be resorted to as a last resort.

Now in closing I wish to give you just three points which will cover all that goes to make up a good starter. So closely related and so important are they that they can not be numbered one, two, three, but they must be numbered one, one, one, and these are the points, pure milk, cleanliness and temperature.

THURSDAY AFTERNOON SESSION.

Meeting called to order at 2 P.M. by the President, and after a piano solo by Miss Agnes Kouba, the regular program was taken up.

DIFFERENCE IN EFFICIENCY OF DAIRY COWS—STRIKING COMPARISONS WITHIN ILLINOIS HERDS—250,000 WORTHLESS COWS REDUCE THE PROFITS—HOW TO STOP THIS TREMENDOUS LOSS.

PROF. W. J. FRASER, UNIVERSITY OF ILLINOIS, URBANA.

James J. Hill, president of the Great Northern Railroad, recently said: "Agriculture, in the most intelligent meaning of the term, is almost unknown in the United States."

The real relation of the cows and herd to the actual profits derived from dairy farming is little understood by the people depending upon this occupation for a living.

ROSE AND QUEEN.

Rose is an Illinois Experiment Station cow with a record that has made her famous. For ten years she has produced an average of 384 pounds butter fat—448 pounds butter—per year. This is 1.23 pounds butter for each and every day of the 365—yes, of the 3,650 days. Her largest record for one year was the enormous yield of 580.6 pounds butter fat—677.3 pounds, or more than one-third of a ton of butter. This was worth at 23 cents per pound for butter fat, $133.53. In the ten years she produced more than thirty-six tons of milk.

In the same herd Queen has become conspicuous for a very different reason. She has a six years' record of 152 pounds butter fat per-year. And in exact comparison for one year, Rose made more than three times as much butter fat as Queen from exactly the same feed, both in kinds and amount, and with the same care.

Rose is a grade cow bought when four years old for $50. Her average milking period for the ten years was one year five and a third months.

ROSE, $48.32 PROFIT; QUEEN, NO PROFIT.

At 23 cents per pound for butter fat, the annual income from Rose is $88.32, and that from Queen $34.96. At $35 per year for feed Queen would only pay her board, while Rose would return a profit or $53.32. If Queen could be kept for $32 her profit would be only $2.96 per year. If the market price of feed is such that it costs $38 per year to feed a cow, Queen would lack $3 of paying for her board, while Rose would return a profit of $50.32. At $40 for feed Rose would make a clear profit of $48.32. Queen is entirely out of the list of cows worth keeping. There is absolutely no business in keeping her a single day.

SEVENTY-FOUR AS POOR AS QUEEN.

Among the 333 cows of the eighteen Illinois herds were found seventy-four—or 22 per cent—that were as poor as Queen, or poorer, in production of butter fat. More than every fifth cow of the 333 failed to earn her keep. The average production of these seventy-four was only 126 pounds of butter fat—far below that of Queen.

But in the same general class of excellent producers with Rose were found thirty in this 333—or 10 per cent—that produced 300 pounds or more butter fat in one year, and the average production of the thirty was 342 pounds, meaning an income of $78.76.

THE MINIMUM SHOULD BE 225 POUNDS FAT.

A cow must give two and a half gallons of 4 per cent milk per day for nine months a year to be really worth keeping.

This means a total of 225 pounds butter fat, an income of about $51.75 per year, and a profit of $15 or more in some cases) above the market value of feed. And yet there are a multitude of cows in Illinois dairy herds below this standard. Of the 333 cows in eighteen herds carefully tested by this station, 226—or over two-thirds—fell below this standard, and the 226 averaged but 164 pounds butter fat for the year—only twelve pounds above Queen. In three of these herds, numbering forty-seven cows, not a single animal came up to this standard.

DISCOVERED ONLY BY SCALES AND TEST.

Quite unsuspected these Queens have everywhere honeycombed dairy society. All of them are dead-beats; they will never pay for their board. The more of them a dairyman keeps, the poorer he is. The way to find out—the only sure way—is to weigh and test the milk of each cow.

COW PATHS THAT LEAD FAR APART.

Here at the Experiment Station are two other cows, the story of the work of which is worth telling wherever cows are kept. They were brought up alike on the farm and obtained their early education in the same herd of one hundred cows in the Elgin region. Here at the University, with the same identical surroundings and equal opportunities, they are drifted far apart in character.

THREE YEARS' RECORD OF MILK, FAT AND FEED.

The record is complete for three years, and includes every pound of feed each cow ate, both summer and winter, as well as the weight and test of the milk.

405 POUNDS FAT VS. 138 POUNDS FAT.

Cow No. 1.—Three years, 34,171 pounds milk, 1,214 pounds butter fat; one year, 11,390 pounds milk, 405 pounds fat.

Cow No. 3.—Three years, 11,491 pounds milk, 414 pounds fat; one year, 3,830 pounds milk, 138 pounds fat.

NO. 1 PRODUCES TWICE AS MUCH FROM SAME FEED.

These cows were both cared for in the same way and given the same kinds of feed and encouraged to eat all they could make good use of. Cow No. 1 ate 1.56 times as much as cow No. 3, but produced 2.97 times as much milk and 2.93 times as much butter fat. Or, reduced to a like feed basis, No. 1 produced 1.88 times as much as No. 3. No. 3 got only 138 pounds butter fat from the same quantity of feed that No. 1 changed into 259 pounds fat. The one cow is nearly twice as good a producer as the other, on exactly the same feed.

PROFIT OF $34.51 VS. LOSS OF $5.62.

Counting butter fat at 23 cents per pound, and taking out the exact cost of feed, the one cow returns a clear profit of $34.51—and the other lacks $5.62 of paying for her feed.

FORTY COWS, $1,380 PROFIT OR $500 LOSS.

Forty such cows as No. 1 would return a clear profit of $1,380.40 per year, and a herd of eighty, $2,760.80. But eighty No. 3's would lose a dairyman $500.

THOUSANDS OF PROFITLESS COWS IN ILLINOIS.

No. 3 is not alone in this losing business. The speaker knows from actual testing of 800 cows in forty different herds that there must be thousands of individual contrasts as great or greater than this in the dairy herd of Illinois.

The profitless cow is a real and living issue and a large one in dairying for bread and butter. One of the greatest and easiest steps of improvement in the dairy business today is to discover and weed out these poor cows. Isn't it time to stop guessing at these vital elements in the profit of the dairy business and to find out for sure—by weighing and testing the milk—what each individual cow is earning for the owner?

WIDE DIFFERENCE IN DAIRY HERDS.

We all know there is a difference in dairy herds as well as in individual cows. But do we clearly understand that some Illinois herds do not pay for the feed given them? That other herds pay too small a margin of profit to justify the investment in money and labor? And that still other herds are making their owners big money? Do dairymen in general know that these differences rest on plain causes that may be readily understood, and that a change from the poor herd to the highly profitable herd is a comparatively easy matter, within the reach of any farmer who is able to keep cows at all?

2.5 COWS PER CAN; 6.4 COWS PER CAN.

In one locality of Illinois the speaker found a remarkable contrast between two dairy herds. In one, forty-five cows produced eighteen cans (eight gallons each) of milk per day—two and one-half cows per can. In the other, thirty-four cows yielded five and one-third cans—6.4 cows per can.

DIFFERENCE IN PROFIT OF $46 PER COW.

At $1.15 per 100 pounds for milk the cows in one herd would average an income of $88.50 and a profit of $48.50 per year, after paying $40 for feed. While the poorer herd averaged an income of $34.50 and a profit of $2.50, after paying $32 for feed. Here is a difference in profit of $46 per cow.

$1,000 FROM 400 COWS; $1,000 FROM 21 COWS.

A man must have 400 of these poor producers to clear $1,000 per year, but he could make the same money with twenty-one cows like those of the best herd.

DIFFERENCE OF $16.59 PER COW IN TWELVE WHOLE HERDS.

Eighteen dairy herds in another part of the State were tested by this station. For one year the average production of the best six herds was 280.5 pounds of butter fat per cow, and of the poorest six herds, 172.7 pounds. At 23 cents per pound for butter fat the best six herds made an income of $64.51 and a profit of $24.51 per cow, after deducting $40 for feed. The poorest six herds made an income of $39.72 and a profit of $7.92 per cow after paying $32 for feed. Here is an average difference of $16.59. In a herd of fifty this would amount to $829.50. Every cow in the best six herds averaged more profit than three cows of the poorest six herds.

THE ECONOMICAL COURSE.

A study of these herds shows that the economical thing to do is to sell the poor cows to the butcher as fast as they can be replaced with better producers. The greatest practical difficulty is in discovering which cows are poor and how poor they are. This is quite easily done—in just one way—by weighing and testing the milk of each cow often enough throughout the milking period to get a fair estimate of her worth.

WHEN THE COWS COME HOME.

The actual relation of the cow and the herd to the clear money that the dairyman gets out of the business, is as a rule, neither known or suspected by the man depending on this occupation for a living. Very few dairymen even set down the payments received for milk and the items of money paid out for the whole herd, to say nothing of the individual cow's record or estimating the cost of feed.

LOWEST FOURTH AND HIGHEST FOURTH OF 554 COWS.

There were 554 cows in thirty-six herds tested a full year by this station. Of these the lowest one-fourth, 139 cows, yielded an average of 133½ pounds of butter fat, and the highest 139 cows, averaged 301 pounds butter fat.

77 CENTS PROFIT PER COW PER YEAR VS. $31.32.

The 139 poor cows made an average return of $30.77 (23 cents per pound for fat). At the low estimate of $30 per year for feed, this would leave 77 cents per year profit per cow for the whole year's work and investment. Allowing these better cows $38 for feed ($8 better than the poor producers) the clear profit is $31.32 per cow.

130 COWS, $107; 139 COWS, $4,000.

The profit for the whole 139 poor cows is only $107, but the clear money from the best 139 cows amounts to more than $4,000.

Every one of these good cows averages as much clear profit as forty-one cows of the poorer kind.

The drawings on the chart (Exhibited) show the exact relative size of the two herds that would make the same amount of profit for the owner.

In four and one-half days each one of these (pointing to chart) cows earns 1 per cent profit! It is only necessary to have enough of these earners to make a large amount of profit. Thirty of them will produce the value of one acre of corn. All of these to equal twenty-five really good cows and get $783 profit! To equal a herd of eighty cows averaging 301 pounds of butter fat would require 3,266 cows of the above kind.

THIS CONDITION EXTENDS TO WHOLE HERDS.

All the cows of the poorest producing herd of these thirty-six herds averaged a profit of but $1.74 per cow. The average cow of the best herd is worth more than twenty-four cows of the kind that forms the poorest three herds. The speaker knows three other dairy herds in which the milk returns show a profit of but 62 cents per cow. While in the same neighborhood are three herds in which the milk averaged a profit of $60.94 per cow. The average cow in the three good herds equals ninety-six cows of the kind that makes up the poorest three herds. And in another dairy locality the same kind of a contrast came to the speaker's attention.

WHY TEST DAIRY COWS.

Ten years' observation of Illinois dairy herds and the individual testing of more than 800 cows in over forty herds, has given the speaker positive evidence of the practical worthlessness of about one-fourth of the cows in these herds. Such cows are common in every community. As a rule there are some such in every herd.

NO ACCOUNTS KEPT.

It is equally surprising that these poor cows are not known to the owner; their demand on his charity is not suspected. It is very hard to find a dairyman who employs any means whatever of knowing the exact returns from each cow in his herd. The ordinary dairyman has no idea of how such milk, butter fat or butter each animal produces in a year, or how much it costs to feed her. The natural result with the majority of our dairy farmers is large investment of money and labor for too small returns.

EVEN IF MILK IS SOLD BY WEIGHT ALONE.

If a man has a cow giving 5 per cent milk, that milk is worth more pound for pound than milk testing 3 per cent, and costs more to produce it. The dairyman can take advantage of the extra value in the milk of such a cow by adding to his cow giving a large flow, but testing much lower in fat. This would economically increase the amount of milk without reducing the test of all the milk below a fair standard. In this way his high-testing cows are made worth more to him and he can afford to keep them; otherwise they would be less economical than the low or medium testing cows. Every dairyman should know the test of every cow's milk even if he sells milk by weight alone.

If the milk is sold by test, then of course it is of direct importance to test as well as weigh the milk of each cow in order to know what income is returning.

The yield of milk may vary greatly at different times in the milking period or under different feed and care. A cow that gives a large flow of milk for a short time may not yield as much for the year as a cow that gives a smaller amount for a longer time. It is the total of the year's production that counts.

THE ONLY WAY.

There is no other or easier way to find out the accurate production of each cow than to weigh and test the milk of each separately. This method is found simple and practical by those who have tried it, and their common verdict is that they receive much better pay for this than any other labor done on the farm.

The measure of milk will indicate its weight fairly well, but to be of value the measure must be exact, and it is much easier to weigh the milk than to measure it. Some may think they can estimate what a cow gives by noting how high the milk comes in the pail, but this is nothing more than guessing and is far more liable to be wrong than even approximately right. The froth usually prevents seeing where the milk comes to on the side of the pail, and as the froth varies in thickness at different times and with different cows, it is very apt to deceive the guesser.

THE VOICE OF EXPERIENCE.

Experienced dairymen who have begun weighing the milk have told the writer without exception that a close guess at the amount of milk in the pail is practically impossible, and they have every one been surprised at the revelation of the scales.

It is still harder, impossible, to estimate the per cent of butter fat. All milk of the same richness does not show the same color, and even the amount of cream that raises on it is not a sure indication. A small quantity of high-testing milk may be worth more money than a large quantity of low-testing.

The people who know, who have practical experience on both sides of this question, have come to see that guessing won't do, and that weighing and testing the milk is absolutely the only way to know what a cow is worth to the owner.

SACRIFICE OF DAIRY HEIFERS.

A large proportion of Illinois dairymen are not raising their heifer calves, but buying their cows. This means there is no provision for perpetuating the dairy herd or the best cows in it; in a few years all the good blood of the present herd will be gone. The dairyman's skill or good fortune in picking out fine cows goes for nothing except as to the individuals so selected. If the owner has paid a high price for a high-producing cow he makes no provision for keeping that extra value in the herd any longer than the life of the animal. There is no promising heifer coming on to honor memory and emulate the record of an unusually good mother. It is a sad and unnatural and very expensive custom, this disregard of family connections, this race suicide of good dairy qualities. It may do away with supporting poor relations, but it by no means gets rid of poor and poorer cows. Think of selling for $2.50 the heifer calf of a cow with a record of 405 pounds of butter fat per year! But that was the practice with cow No. 1 (previously referred to) when bought by this Station. The owner was simply following common custom.

The tendency of this custom is bound to be towards poor cows. Is the buyer able to pick out or even to find enough really good cows for his purchasers? He is naturally more interested in selling cows—and in selling all of them—than in supplying high-producing cows. And the cows sold do not always live up to this kind of dual purpose. The dairyman wants cows for milk; the dealer wants cows to make dollars in selling them again tomorrow. And the cows sold do not always live up to this kind of a dual purpose.

The cow buyer has no such natural advantages for getting good cows as the dairyman has. The latter has the mother cows and knows something of their milk record; he has cheap feed and the necessary equipment; calf raising is a part of his business. It is absurd to suppose that the dairyman can buy as good cows as he can raise. A prominent dairyman of the State says of his grade herd: "The heifers we raise from our best cows are better milk producers with their first calves than are the average mature cows we can buy." Several of our most progressive dairymen have said practically the same thing.

When asked why they sell their heifer calves the dairymen almost invariably reply that it takes too much to raise them. This question was carefully investigated with forty-eight calves by the Illinois Experiment Station. Twelve calves at a time were tested at four different times. It was found that they could be successfully raised on 150 pounds of whole milk (worth $1.50) and 400 pounds skim milk (worth $1.20); total cost,

$2.70. This milk was fed at the rate of ten pounds per day until the calves were fifty days old, when it was gradually lessened one pound per day for ten days and then no more was fed. No substitutes for milk were used. Only the ordinary grains which the farmer produces, and a good quality of legume hay, were fed, showing that the dairyman can raise a calf in this way with almost no extra trouble. The calves got rather thin for a time but they made good growth, and several of them are now cows in milk and good producers, indicating that they were not injured by this method of raising.

The other cost of raising a heifer to the age of 28 months has been estimated according to some prices, at $9.60 for the pasture and $8.10 for the feed. This with $2.70 for the milk and $3 for the value of the calf at birth makes a total of $23.40. But even allowing that it costs $30, there is still a large profit in the operation, for the dairyman cannot as a rule buy cows for $45 that are equal to these heifers. Fifty per cent on the investment! Isn't that a good business proposition?

If breeding means anything anywhere it means that the cow's quality of large milk production is likely to be transmitted to her daughter. There is no other animal from which such an absolute and complete record of performance can be secured as from the dairy cow. Shall the value of these records to her progeny be thrown away by not saving the good heifer calves?

Nobody else has so many natural advantages as the dairyman for raising good heifers, and nobody else has the dairyman's interest in it, or is likely to succeed so well at it. Any other principal method of replenishing the herd is sheer wastefulness of great natural advantages.

PECULIAR VALUE OF A GOOD DAIRY SIRE.

Calves will take their qualities from both parents, and it is equally important that the calves have good parentage on the male side. But dairymen pay comparatively little attention to the quality of the sire. In a recent visit to the dairy region of northern Illinois the speaker saw six herds in which the heifer calves were raised for future use, but which the bulls used were miserable little scrubs, veritable runts and weaklings, obtained by simply saving a grade calf from the herd. And of many other sires fairly good as individuals, nothing is known of the actual milk production of their female ancestors.

SIRE MORE THAN HALF THE HERD IN THREE WAYS.

It is literally true that the sire is "half the herd." Of the qualities bequeathed to the calves the male parent furnishes half. In a herd of forty cows his influence is as great as that of the whole number of cows together.

If he is of stronger prepotency than most of the cows, that is, able to transmit his qualities more surely and strongly to the progeny, which is usually the case with a well bred sire, then the bull represents more than half the herd. In that case more than half the characteristics of the calf, or the stronger and predominating half, comes from the sire.

Now if the sire, as an individual and in his pedigree is superior to the cows—and this will be true where a pure bred sire is used on a grade herd—characteristics he transmits to the calf will be of more value than those that come from the mother, and in this sense also the bull will be more than half the herd

The sire is half the herd each year. Each year he starts out a generation of calves, more than half the qualities and strength of which were transmitted by him. His successor, of similar type and breeding, mated to those improved heifers, carries the improvement forward another step, fixing the qualities and power to transmit them more surely and strongly. From generation to generation the succession of well selected sires goes on increasing and intensifying the improvement of the herd. In this way the sire becomes three-fourths, seven-eighths, fifteen-sixteenths, etc., of the herd. So the sire may be much more than half the herd whether judged by the quantity, strength, quality or accumulated effect of the characteristics he transmits. It is literally true that the sire may thus within a few years at slight expense completely transform a dairy herd and more than double its profits. In fact in a few years the sire practically is "the whole thing."

A GOOD BUSINESS PROPOSITION.

Say the sire cost $150, and a dairy sire of the highest quality can be obtained for that. The forty grade cows at $45 each will cost $1,800. A good bull costs only one-thirteenth the cost of the herd. Then one-thirteenth of the investment is so placed as to exert more influence in the improvement of the future herd than the other twelve-thirteenths of the investment. Isn't that a good business proposition? Won't the extra $100 put into a good sire be better spent than any other $100 invested in the herd? Forty-one animals are purchased. The purchase of one animal will influence the succeeding herd more than the purchase of the other forty animals. Isn't it worth while then to give some extra time and study to the selection of that one, the sire?

THE SIRE AND THE MILK RECORD.

The good dairy sire, the pure bred, is almost certain to have a line of dams with a superior milk record; they have been bred for that very thing. One of the very greatest things to secure for the heifer calf is the inheritance of a large capacity for milk production, and this comes from the mothers in both lines of ancestry. The calf will be much more certain of getting a high degree of this quality through an improved sire than from a grade mother. A high milk record in the sire's female ancestry affects all his female progeny—all the next generation in a common sized herd

ABSOLUTELY PROVED.

Every man who has had extended experience or observation in this matter will agree that the pure bred dairy sire from high-producing dams, and which is also a good individual, is of peculiar value and great economy in building up the herd. The records of dairy breeding have proved it conclusively a thousand times over. No man who studies the facts can doubt it. The evidence is to be seen in the heifers of every such sire, and in their contrast with heifers lacking such parentage.

ADDRESS.

PROF. E. H. WEBSTER, CHIEF DAIRY DIVISION, WASHINGTON, D. C.

Mr. Chairman, Members of the Convention: I am certainly very glad to be with you and be able to talk over some of the things that are of interest to buttermakers, because the interests of the buttermakers here are similar to those in other States, and we are trying to study your conditions and needs, to find some way to meet the demand that you make upon those that are trying to serve you in that way. I feel this afternoon that my position is simply a servant of the dairymen and buttermakers of this country, and as long as I occupy the position I now have, and as long as I can be of assistance in helping the dairy interests of the country, I am certainly glad of the opportunity to be of such use.

I wish, if we could get nothing more out of this convention than the talk given here by Professor Fraser a few minutes ago, that that would sink into your souls and you could take it home with you, and those who are milking cows would remember what he said, and those who have interest in the farmers that come to your creameries, take that home with you and tell your patrons what you have learned here in regard to these facts so well illustrated by Professor Fraser. I think it would be well to spend an hour now in absolute silence meditating on what he said. I believe it would be an hour of profitable experience to us if we would think over the address we have just heard, if we would think of the opportunities and possibilities before us in our own immediate circle for the betterment of dairy conditions; and an hour spent thinking along those lines would be profitable to all of us, and yet we cannot take the hour that way, but we will have weeks and months and years from now on when we can dwell on these things, and I hope it will grow into action, and that we will all prove by our actions that we have been benefited by this excellent talk along the line of production of milk, because that is the foundation of all of our work, and all the effort we put on the manufacturing or marketing of butter is simply in continuance of what we ought to do in the line of production, in encouraging profitable production among our farmers.

We have a great many complaints coming to us as buttermakers; a great many farmers saying it is not profitable to dairy. We have seen why it is not profitable, but take that home with you and show the farmers why it is not profitable. I wish I could spend an hour on this subject, but it is out of my line. Think of a cow test association at your creamery with you as the tester. I believe there are possibilities along that line, and if the buttermaker will form in his own community a test association whereby he can test his farmers' cows and point out to the farmer the things we have had shown here this afternoon, and when you do that you are going to have a lot of farmers that are dissatisfied with their conditions and many who are willing to do as you tell them because you have helped them to do something more and better in dairying. In the State of Iowa I believe you have a man appointed by the authorities at Ames to travel over the State and encourage these things. Give them your support; give Professor McKay and those men your hearty support; see that you help them. Help them in their work, you that are interested in dairying, and you will help to send out more men in this State right along that line. It takes money to do these things, but money will come when you once convince the people that there is something to do and something in it, when they feel that for every visit a man can make them it will put dollars in their pockets they will try to have those visits very frequently.

The thing I want to talk about is to you buttermakers as artisans or skilled workmen in your line of work. A few months ago at Chicago I proposed a scheme for doing a little work in the markets, trying to help the buttermakers, who seemed, from bad surroundings, bad environment or lack of proper information, unable to make as good butter as they ought for good butter markets, for the markets to which they shipped. The suggestion took very kindly and I put it up to our department and they sanctioned it; we got a couple of men, tried to get the best we could—got one here, got one in Minnesota—and put them to work on this line. I want to explain that line of work because many buttermakers have misunderstood our intention in this and some of you have had criticisms and have not understood just how to act. The only purpose on earth in putting these men in New York or Chicago was to help you, and if we cannot help you we are going to quit it. Mr. Runyan can tell you the commission men in New York city can take care of themselves, and yet he will tell you this is helping them because it has helped them to get a better grade of butter, and that is the sum and substance of the work to improve the quality of our butter.

There has always been, and is yet to a great measure, a gap between the work the States are doing through State dairy and food commissioners and inspectors they employ in the field and the marketing end of our great industry. The fellow who makes the butter and the fellows who are producing the milk that goes to make the butter do not know anything about the other end of the line, and very often when you get a letter back from the market that has not made you feel good you are apt to accuse the men of doing so in order to catch you a little. There is a feeling that the fellow at the other end of the line is not perhaps as honest as he might be, and if he can find a way in any way, shape or manner to cut you on test, weight or price, he will do it. I am not saying that this is the case, but yet that feeling has sometimes gone out and the fellow at the other end of the line has been unable to express accurately to his patron just what the trouble is with the butter. He is in the same position to you as you are to your fellow farmers in the country. Much the same relation exists between the two sides of the work, in his failure to tell you that your butter was off in certain points and not being able to tell you where it was off, to put his finger on the spot because he was not a practical buttermaker, and this led to all this feeling which I suggest.

It occurred to me that if we could place an independent, capable fellow in these markets for the use of the creamery men and your use, we could overcome a great deal of this misunderstanding that has grown up between the buttermaker and the butter buyer, and that is the reason Mr. Smarzo and Mr. Credicott are on the markets today. They are there for your use; we want them to make you examine your butter; if you have fearful doubts in regard to a shipment going from your creamery, if you are shipping to New York or Chicago, write to our men and get them to examine your butter, have them report the trouble with your butter on the market. There is a great deal of misunderstanding because butter sometimes at the creamery is not the same kind of butter it is 1,500 miles from the creamery at the market in ten days' time. Butter changes in transportation; what we have thought to be a good piece of butter at the other end of the line is a bad piece of butter when it reaches the market, and you have not been able to follow that up. These men on the market can do that for you, can report to you directly and definitely just how that butter arrived, and I believe if you buttermakers will take advantage of that opportunity to find just how your butter is going on the market it will do you a whole lot of good.

Now the work that we have done since the first of July has been an eye-opener to us and perhaps to some of you. We have found, to say the least, a bad state of affairs in many creameries over this country. I believe the creamery men themselves, the buttermakers, are at fault very largely in this. You are at fault because you have not been able to find out just how your butter appeared on the market end of the line; you are at fault, perhaps, because you have not had the proper training to understand the difficulties occurring every day in your creamery. There are a lot of things coming up every day, some new to us and some old things threshed out over and over, and yet conditions are a little different and we fail to meet them. If we can help you to meet these foreign conditions that is what we want to do, and we solicit your help in doing that.

I think last night Mr. Shilling spoke a little of the extent of oleomargarine sales in this country. In the last two months it has increased very materially. Of course there are two reasons for this, one the high price of butter; but one of the things that help the oleomargarine dealers sell oleomargarine is because the buttermakers are making poor butter. If you will place on the market butter scoring 93 to 95 you will have little trouble with oleomargarine, because people want good butter and will buy it, and when they get butter that will only score 85 to 90, butter that is not good, they will not buy any more of that butter and will not use much of it if they have it. There is no better argument for the sale of oleomargarine than poor butter, and I believe in the last five years our butter product has been getting poorer all the time. Perhaps there are a number of reasons for this; one, I think, is the tendency among a great many buttermakers to get a little higher profit by working too much moisture in the butter. A good many buttermakers over the country have found to their sorrow there was too much water in their butter and have had to pay 10 cents a pound for the water in their butter, which was expensive to them. The revenue department says butter containing 16 per cent or more moisture shall be called adulterated butter, on which you must pay 10 cents tax, $500 a year license for making, and the revenue officers wherever they can find a big enough bunch have been collecting that tax, and every here and there we find some fellow that has to pay the penalty. When this butter goes in storage and then on the market all of us pay the tax, because we get poor butter for it, and if we find anything better than butter we will buy it in the end whether oleomargarine or not.

Another thing that helped reduce the quality of butter, for which the buttermaker is responsible partly, and a great many others are also responsible in a way, and that is the method by which we have been taking in hand separator cream. I have always maintained that cream can be produced just as fine from farm separators as from any other separator. The separator does not do the bad work, but it is the way the separator is handled on the farms, the way we have allowed the farmers to handle the separator, that has caused the trouble. We have been watching this thing closely, have had a number of men in the field, have watched the introduction of the separator in the whole milk creamery, and have found almost invariably when the separator went in the quality went lower. It is not the fault of the separator but the fault of the men who operated the separator and the fault of the buttermaker in taking bad cream from that separator. Now I know these things are easy to talk about and hard to do. I think in the cream separator question that has been true because there is not a fellow that has had anything to do with it but wished he could eliminate the poor cream, and sometimes if he did that he would eliminate all the cream he had and would go out of business, and we have to meet that in some way. We have to find some way to provide a more profitable business for the farmer to produce milk without the separator or else show him how to use the separator and make good cream, or else the quality of our butter will continue to go down. There is a demand for good butter. We do not make enough butter in this country, and yet we make too much of the poor kind. There is a demand always for fresh, good butter. It will always sell at a premium, and those of you who are making good butter know that, and those of you who are making poor butter have found the difference in that, and yet I do not believe today we are selling our butter just as we ought. I think commission men in our cities would like to pay for our butter according to worth if they could, but they have the same thing to contend with as you have in the creameries, and you act just as bullheaded about it as the farmers do, and there is where your trouble is. Now there is a place where you could practice a few of the things you are going to preach. I wish something could be done that would overcome this difficulty without so much hard work and worry on your part, but it seems we have to go through the ordeal and come out purified in the end, I hope. I believe we will.

Now one of the things I want to speak of briefly, and yet perhaps it will be the most interesting thing I have touched on, is in regard to the moisture in butter. We all know how hard it has been to find out what our butter contained in moisture. It has been almost impossible to tell just what moisture the butter contained, simply because the methods of procedure in determining moisture were so complicated that outside of a chemical laboratory is was not possible to give any accurate estimate as to the full amount of moisture that butter contained. One of the things we have been working on is along that line, so you can, before removing your butter from the churn, know what moisture it contains in the churn, and can do it quickly, cheaply and without any more skill than you now employ in the use of the Babcock test. We have been told by buttermakers and merchants all over the country that something of that kind would be of great assistance to the butter trade.

Mr. Gray, chemist for the department, who has had a great deal of experience in the manufacture of butter, and has had perhaps a wider experience in controlling the moisture in butter than any of us, has been working for several years along this line. The last four or five months he stumbled onto a number of things that have simplified the problem a great deal, and I believe he has made a test which any of you can use in your work, or any commission man can use and know what the moisture content of his butter is to a certainty, just as close to the actual chemical test as the Babcock test will give you the fat in your milk. The apparatus you have to have is very simple; it will have to be made, there is no glassware manufacturer making it today. The first requisite is a pair of scales, and most of you have them in your creamery, and they will be close enough for accurate work. With that scale comes a nine and eighteen gram weight, but we have to have a ten gram weight because bottles are easier read with ten gram samples, but you can get a ten gram weight for a few cents. Order them from any supply house. You need ordinary scales, a small alcohol lamp, which can be bought from 25 to 50 cents; some little flasks like this for a few cents apiece—they are found in every chemical laboratory in the land and will be put out with the apparatus, undoubtedly—and then the part which is new to the work is an instrument like this.

Professor Webster then showed the apparatus and explained the method by which the test was made. This will be fully explained in a bulletin soon to be issued by the government.

Altogether it does not take over twelve to fifteen minutes to make the test, and that is within one-tenth of 1 per cent of what it would be if you took the ordinary method of trying, which takes several hours to do, and we believe in this little sample test that you have something that will help you make a uniform quality of butter, such as you have not been able to do. You know how hard it is to regulate the moisture content. When you know exactly where you are there will be a lot of other things you will begin to study, that is, temperature at which you churn, temperature of your wash water, number of revolutions you give your churn, and a lot of those things you will find will influence the water in your butter. If we can place in your hands something like this that you can measure what you are doing, you will quickly learn there is a method in making butter that must be adhered to as rigidly as any other line of manufacture. It is not guesswork, and what is true today is true tomorrow, and if you learn some definite rule and stick to that you will have the same result every day. The lack of that knowledge on the part of most of our buttermakers and a good many teachers in the dairy school has shown us that butter varies wonderfully in water content, and consequently in fat content and in salt content. The study of moisture and its control in butter is going to enable you to grasp the principles of making butter such as I believe you never have before, and this little test will help you to do that.

I cannot say just what this will cost you. The glassware manufacturers ought to make this. This is the only part that is new at all. They ought to be sold at from one to two dollars. The United States government has taken out a patent on the apparatus that is new, and by so doing they have protected its use in this country, so that any manufacturer of glassware can make these tubes for you. No one will have a monopoly on it. As I said, in a few days we will have out a descriptive circular which will be placed in the manufacturers' hands, as well as yours, and will spread this broadcast so that anyone interested in it can use it. This I have described as a test for butter. You can use it for anything on your table at all. You can test the amount of moisture in any food product that you can get into this glass. You can test cheese or any other food product, or any of the feeds that are consumed by the animals in your herd for moisture content.

Are there any questions that you would like to ask?

THE PRESIDENT: If there are any questions you want to fire them at Prof. Webster now. It strikes me that this is important for the buttermakers of Iowa, and I believe if they could by that little machine incorporate the moisture in butter all the time up to the limit we will not have so much trouble with competition. Another thing I want to say, this little machine has been invented by a man, who, like Dr. Babcock, instead of manufacturing it and making a fortune out of it has given it to the world.

PROF. WEBSTER: I think there is no question whatever if Mr. Gray wanted to leave the department and patent this invention of his he could make a fortune out of it, because it is going to be used very widely. Mr. Gray is an Iowa boy, was educated at Ames, so it is a home grown product I am trying to introduce.

MEMBER: Where should the sample be taken from?

PROF. WEBSTER: If you have your churn standing level so the water will not run up to one end, you will find it uniform throughout the churn. This has been tested a number of times. In taking a sample from the churn do not take just one sample and put it in the bottle, but dig out a little here and a little there all through the churn, and in that way you will have a representative sample Put those samples in an ordinary pint milk bottle or jar. In order to mix that so when you take the butter from it you will not take butter with a big drop of moisture, or butter with absolutely no moisture in it, set the bottle in water at about 100 degrees temperature and let it melt so it will be soft and slushy, then shake that all up and thoroughly mix it in that way. You will then have the water mixed all through the butter and can have an accurate sample of the amount in your bottle. If you take it from a tub there is a question that perhaps needs more light than we have, but ordinarily I think one or two triers run through the tub and then taken out the length of the trier will give you an accurate sample. Care must be used in getting a proper sample as in getting a proper sample of cream when testing for your patrons. If you get a sample too rich in fat by taking it off the top of your can, the test is worthless. Just the same here, if the sample is not representative of your butter it is worthless.

MEMBER: What assurance will we have that those bottles will be manufactured accurately.

PROF. WEBSTER: The same assurance that we have that our Babcock tests are accurate.

MR. WILCOX: Should a sample stand long before it is tested.

PROF. WEBSTER: If it stands long have it covered so the moisture will not evaporate. If you put your milk sample in a test bottle and allow it to stand, when you test it the fat is all there. If you put a sample of your butter in a little flask and go back in two or three days most of your moisture is gone. You must make the test at once or have tight, rubber stopper on your bottle or something to close it up.

Most of the samples we take in the department are of renovated butter and of course these are not comparable with creamery butter. We have taken few samples of creamery butter for analysis.

MR. NEWMAN: I believe that most creameries are not getting enough water in their butter.

PROF. WEBSTER: If they are doing that they are robbing themselves and their patrons, just the same as if they were doing anything else. A man wants to keep low enough so as not to be beyond the limit of the law; up to 15 per cent or 16 per cent of moisture does not affect the quality of the butter, but when you get it 20, 25 and 30 per cent, and I have tested as high as 35 per cent you are going pretty high.

Mr. Newman: The last test in October the average test was only 12 per cent.

Prof. Webster: The average for the country a few years ago was only 12 per cent.

Mr. Newman: I believe you should give the boys the water content of their sample of butter here today. Let the boys know what they are doing.

Member: I would like to know if a man would handle his butter as he would to make butter for conventions, if there would be any great danger of getting too much moisture?

Prof. Webster: No, and I would hesitate to say that the butter at this convention represents the average butter made by the boys.

Mr. Smarzo: I do not agree with Mr. Webster on the question of 15 per cent or 16 per cent of moisture in butter. I find on the market that from 14 1-2 to 15 per cent has better keeping quality. I tell you boys the butter with from 15 per cent to 16 per cent moisture deteriorates very fast. It may be due to poor wash water. It may be if you wash the butter with absolutely pure water it will not affect it, but the average water used in the creameries injures the keeping quality of butter. That is my experience in the market, and I do not advocate over 14 1-2 per cent moisture because I think it is dangerous to go above that. You are entitled to 16 per cent moisture, but when you get there you are working along the danger line.

Prof. Webster: The fact is a few years ago our butter did not average over 12 per cent moisture, and now we are getting poorer and poorer butter and are getting more water content.

Mr. Barnum: I have had butter tested in Minnesota and Iowa and all have gone under 13 per cent.

Prof. Webster: I wish all the creameries would do that, but Mr. Smarzo has found sample after sample that has run away above 16 per cent, but that is not the average. He picked those out because they were suspicious.

Mr. Smarzo: All the good butter that comes to the market that has a score of 93 runs below 14 per cent, but the poor grade of butter gets a pretty high moisture.

Member: Would it not naturally follow that if they get some accurate way of measuring water content in butter, that this butter with low water content will sell at a higher price than that with a higher moisture content?

Prof. Webster: If what Mr. Smarzo says is correct that will be true.

Mr. Bouske: I have worked at the experiment station and published a bulletin a year ago in which we gave the analysis on several hundred samples of butter, and along with this we gave the keeping qualities of the butter. The butter was scored at various times and the analysis of it does not show that the butter having the highest percentage of moisture scored the least nor that they do not keep the best, and it seems to me that I would wait a little before I would come to any very radical conclusion about this thing. If several hundred analyses are not enough I would wait for more.

Moreover in regard to having discovered what percentage of water the Iowa butter contains today, the experiment station is making analysis of butter right now for the purpose of showing how much water the butter contains, and the man who has charge of this work is coming here this afternoon. He may be in town now and one of the men who is helping him is here and I think can give some figures on moisture content of Iowa butter today. I think we would like to hear from Mr. Larsen.

Mr. Larsen: I have no figures here today to show analysis, but we are receiving samples every day and find that the water content of butter averages about 2 per cent higher than it did two or three years ago, running about 14 per cent now. We are analyzing them completely and sending the report to the creameries and the buttermakers. I think Professor McKay will speak on this subject and he has more figures to give on this. He will also speak about the keeping quality. As far as the water content is concerned, we believe that butter that contains 16 per cent can still be extra butter.

Prof. Webster: Would you not make some modification of that as to how the 16 per cent was put in there? One of the difficulties I think we are finding is that most of this 16 per cent moisture butter has been made by overworking and has destroyed the body of the butter, and then you have an awfully poor piece of butter.

MR. SMARZO: I do not think the contest butter is a fair average of the butter. When a man makes a tub for the contest he is making a drier piece of butter on an average than he does when he sends it to the market. I know I used to. I tell you, gentlemen, when you get to 16 per cent you are on the danger line. It depends a great deal on the scorers of butter. There is a great deal of variation in the judging of butter today, in a commercial judge and an expert judge, and they vary a whole lot. When you have contest butter you may carry that on for some time and think it all right to incorporate that much moisture, but you will find it quite different with commercial butter.

THE PRESIDENT: I am sorry that we can not give further time to this, but there is a subject I want Professor Webster to address you on for a few minutes more, and it is something important.

ADDRESS.

PROF. E. H. WEBSTER, CHIEF OF DAIRY DIVISION, UNITED STATES DEPARTMENT OF AGRICULTURE.

I hate to spring so many things on you, perhaps you will think I am trying to get you into trouble. The work of the dairy and food commissioners in our States has been splendid. They have sent inspectors to your creamery to show you as nearly as they could how to overcome some of your difficulties. We have tried to supplement them in their work, and this has been done very well, and the inspectors in the States have been glad to get these inspectors in the market, but we have not gone far enough in that work to round up the thing as it ought to be. Our object is to get the good buttermakers in the country listed so we will all know who they are, and when we do that a good many will go out of the business or else take low wages. If what I say hits that class I do not care, because we have to have better buttermakers in this country; they have to be better educated and trained before taking charge of creameries.

The proposition I have to give you is one I have evolved in scoring dairies for the production of milk for our cities. I found it was impossible to get any basis of comparison in inspection. An inspector would look at a dairy, find some fault, pass on to the next place, perhaps make report of it and file it away. There was no way to get any comparative basis. He did not know whether he was going backward or forward, did not know whether the men were improving as they should. We evolved a score card and have had that in practical operation in Cleveland for some months, and it has taken remarkably well. The inspectors of the food department and the Board of Health in Cleveland have taken this score card. It is almost as elaborate as the score card we score poultry by, but it gets down to the very things we are after. They have scored several hundred dairies and have been surprised themselves at the findings they have got, although some men have inspected those same dairies for months and years and did not know where they were; but by means of grading those dairies on the basis of 100 per cent I believe they found the average dairy at Cleveland scored 33. We know the milk condition of our country is not anywhere near where it should be, but it is in better condition than the butter question, and I would hit the milk people harder if I were talking to them than I have you. It is there we took up the idea of the grading score card, and it struck me that if it is good for scoring dairies and milk why is it not good for scoring butter and cheese?

Another problem that confronted me was that perhaps it was not the buttermaker's fault perhaps it was the creamery management; or perhaps the creamery management did all they could and failed to get a good buttermaker. So we have made two score cards, one that covers the buttermaker and what he is responsible for and the other that covers the management of the creamery and what it is responsible for. So when an inspector goes to a creamery he will score you, and perhaps some of you pretty hard, and the creamery in its condition of responsibility, which lays upon the ownership or management of that creamery, and thereby we hope to fix responsibility for some of those bad conditions that exist. We will say butter comes to New York or Chicago scored away down. We hold the buttermaker responsible for it, and half the time he is not to blame, simply because the party who owned the creamery has failed to do his part or the patrons have failed in their part, and we want to fix the responsibility on the right party. More than that, we want the inspectors at the end of the year to say definitely that the creameries in Iowa on an average score so much, the buttermakers score so much on their ability to do the work they are paid for doing. With that point in view we have tried to get up this card, which is open to change and criticism. It has been submitted to the Minnesota Dairy and Food Commission, and will be submitted next week to Wisconsin and Illinois, and has already in Michigan, where I think they are going to take it up.

MEMBER: I would like to ask if the buttermaker will know what he scores when the inspector is there?

PROF. WEBSTER: A card, signed by the inspector will be left with the buttermaker, giving his score, so he will know what the inspector did at his place.

MR. WENTWORTH: Will you have those score cards published?

PROF. WEBSTER: That will be up to your dairy and food commissioners. We will not influence anyone one way or the other on that.

THE CHAIRMAN: This is a very interesting subject and I am sorry we have not more time to spend on it, but it is getting late and we will pass on to the next number, which is the handling of hand separator cream by Mr. J. J. Brunner of Charles City.

HOW I HANDLE HAND SEPARATOR CREAM.

J. J. BRUNER, CHARLES CITY.

Mr. President, Ladies and Gentlemen and Members of the Iowa State Dairy Association: "How I Handle Hand Separated Cream" is not a very long story in itself. If that is all I would tell you it would not take me any more than about two minutes and a half, but by putting in a few other remarks I may be able to make it last five minutes.

I do not handle very much cream myself any more, but I tell the rest of the boys how to do it and, of course, get part of the credit.

My work, especially in the last three months, has been among the patrons on the farm, which I think is the bottom of the trouble that so many buttermakers are having. They do not get after the patrons as they should, or not at all, but just take the cream regardless of quality.

We skim out of the cream about one-half of the milk which is left by the hand separator. This gives us about a 50 per cent cream which is pasteurized to a temperature of 160 degrees Fahrenheit and cooled to 65 to 70 degrees Fahrenheit in the winter and 62 to 65 degrees in the summer, according to the conditions of the weather and starter. The starter we use is generally of a high acidity, quite thick, and is put into the vat when the separator is started. We generally use 20 per cent or more. In about six to eight hours the cream contains from 28 to 35 C. C. of Mann's acid test, when it is cooled to 52 degrees Fahrenheit and kept at that temperature until churning, and the butter is made in the usual way. A few words along the line of reseparating cream at this time may not come amiss. I find that it is quite a difficult matter to skim clean, that is to three or five one-hundredths, as we do in skimming milk. We run our separator at a speed of about 7,000 revolutions instead of 6,000 revolutions, and feed them at about three-fourths capacity. This under ordinary conditions gives a good skimming and leaves less fat in the skim milk than there is left in the buttermilk when cream is churned in a condition only containing from 20 to 25 per cent butter fat before the starter is added.

I am going to tell you how I handle the sour or poor grade of cream that we get at our factories. In the first place, if we get such cream at our farm more than twice in succession we do not take it at all, and I believe that I have gained more points by doing this with our patrons than I have lost. In other words, I have the confidence of the good patrons who always sell good cream.

As I have told you before that we do not get very much of this poor cream at our factories, but what we do get we handle just as carefully as we can. We pasteurize this at a temperature of about 180 degrees Fahrenheit. It is then cooled to churning temperature, and a starter is added, the starter being of the same grade as that used in the sweet cream. Sometimes when we have a very poor batch of cream we use a small amount of viscogin. This will do away with any very bad odor that a poor batch of cream might contain.

There is one thing about reskimming cream, and that is the temperature we separate at. It is generally 70 degrees in the summer and 80 in the winter. We find that by heating to about 85 or 90 degrees we do not get quite as smooth a cream as we do when skimming at a lower temperature. This I believe is caused by skimming the cream the second time.

A few words to the buttermakers here along the lines of working together and pushing the good work of our able Dairy Commissioner and this organization:

You all remember that last winter a law was passed by our Legislature which does not allow anyone to buy poor cream and make it into butter, but do you know that they forgot to appropriate enough money to enforce these laws. Just think for a minute and you will see that Commissioner Wright, with only two assistants, can do very little in this great State of Iowa towards keeping an eye on about 48,000 creamery patrons. I think that Mr. Wright will agree with me when I say that with these two men he can not do as much in proportion as he could with two more, still better with eight more, because they would not have to be on the road just chasing after the most important places.

Now, brother buttermakers, let us get together this winter and go after our Legislature hard for at least eight more inspectors and enough more money to work with, say $20,000 will do, I think. We are going to have a new lot of fellows at Des Moines and it may be that we can get what we ask for.

I tell you, brothers, that the Minnesota fellows up there are doing so much more because they have all these things the way they want them. They have so many inspectors that each one can stay at a creamery all day and tell the patrons how to handle his milk or cream, then tell and even help the buttermaker, if necessary, to make the butter.

The question is, are we buttermakers in Iowa going to lie down and let Minnesota, Wisconsin, and all the rest of them go ahead of us, and tell us we are only from Iowa, where they are no good. Or are we going to push and wake up in this matter, get some help from our poor State and make the patrons furnish us good cream and milk so we can make good butter?

THE CHAIRMAN: We have about ten minutes to discuss this question.

MR. GOODRICH: Can you reseparate sour cream successfully?

MR. BRUNNER: I think you will reseparate cream until it contains over 28 per cent or 30 per cent.

MEMBER: How would you work cream with a test of 50 per cent? We have lots of cream at 50 and 60 per cent, the average would be about 40 per cent.

MR. BRUNNER: I do not think you can reskim it at all. There would be no use trying it.

MEMBER: Would there be any object?

MR. BRUNNER: Yes, reseparating cream removes the flavors of the poor stuff 5 per cent if not more.

MEMBER: I have experimented by adding an equal amount of hot water with cream that was very bad.

THE PRESIDENT: There is a Minnesota man here and if I am not mistaken he is not a friend of the hand separator. I would like to have him talk the way he did in Minnesota. He is president of the National Creamery Buttermakers' Association of the United States, Mr. J. J. Farrell.

REMARKS.

MR. J. J. FARRELL, CARVER, MINN.

Mr. President, Fellow Buttermakers of Iowa: I do not want to make any preliminary remarks here because it would take too long, and I did not come to Iowa to talk hand separators, because I know you have a lot here and if I got started on the hand separator system I do not know where I would end, and before I got out of Iowa I might be locked up; but seeing you are on the subject I would like to say a few words.

Your able chief here from Washington has just told you in a few remarks that the quality of butter for the last five years is deteriorating—is going down hill. Now there is a reason for that—there is a cause, you know, for everything. Some of our great politicians down East tell us that there is a good trust and a bad trust, they always tell us that. Now, gentlemen, the principle underlying all these things—you have a principle—and if you fellows do not have it you have nothing; it is true that there are some good fellows forming a little trust, but the principle is just as bad as the principle of the fellows that are bigger in the bigger trust. We have a principle confronting us today, it is really here; it is a condition we have today in the quality of dairy products. How shall we remedy the quality and make a better quality of butter, and in doing that how are we going to improve the dairy indsutry and make it profitable?

I see you have quality here; there is no question but you have a good type of buttermakers, and the professor showed you the type of dairy cow you ought to have; but, my friends, you cannot make butter out of the poor quality of the material you are getting. You do make what the

German calls "buther;" you make that, but it is not butter. Where is there a man here in this audience that can say if he makes 93 or 94, or a very nice grade of butter, that he cannot make it 105, my friends, if he had nice, sweet cream and milk to make it of? Could he not do it? Certainly he could.

You are all on the wrong track in advocating or upholding—I do not care if the principle is here—I do not want you buttermakers to fall in line and tumble all over yourselves and advocate this principle of hand separation, because just as long as you have hand separators if you have ninety thousand farmers, as some gentleman has said here, you will have ninety thousand kinds of cream, ninety thousand kinds of flavor, and you would have ninety thousand kinds of butter if you made it separately. Now when you get all that together see what a mess you are getting. This cream is shipped in. They are not centralizing plants, gentlemen, they are embalming plants. They dish their stuff out to the people throughout the cities and it passes; it is put on a warm biscuit and it does not really stink, but it goes because they do not smell this embalming liquid that kills it, and it goes. It does not hurt anybody after it has gone through that process.

The idea is to get good raw material all the time. This you have to contend with yourselves. You must get together yourselves, you must come to these meetings, and when you have assembled here do not run home or you will not get the good out of it. You want to get acquainted with yourself, then go home and get acquainted with your patron, and as long as this hand separator system is here educate your patron to bring good cream to you and the poor stuff to the other fellow; then when you have them well educated do not allow anyone to come there and steal your can of cream, be he centralizer, co-operative creamery or individual. It matters not.

You have to have laws to protect yourselves. You are not here as beggars at the hands of the centralizers or your Legislature. What you want and what you have to have is justice; you must have that or you will not succeed. You are not having justice today, and you all know that. When a man out in the country is following the advice of some fellow who says "Cut it out," he is cutting himself out of the business, and in a few years he will be so totally cut up that there will not be enough of him left to talk about. Then what will you do, are you going back to the centralizer and tell them to cut it out? No, you will not be here to tell them that at all.

What I want to bring before you is the objection to advocating a system. If it is the hand separator system and it is here, you want to teach your people the principle is wrong. You all know that if you can make good butter out of hand separator cream you can make better butter out of whole milk. Above all, keep your country creameries going by keeping your cream at the home creamery, and if those people write to you and tell you to cut it out, tell them that you will cut it out when you receive justice at the hands of your lawmakers and the centralizers, and not before.

THE PRESIDENT: I am sorry that we have not time to continue this discussion. I want to make an announcement at this time. Professor Webster has kindly consented to make an experimental test right after we adjourn and that is the reason I am hurrying this up so as to give him time to make this test, and you are all invited to see him make it. I believe this moisture question is the big question before the people of Iowa today and this will be something that is interesting.

MR. WENTWORTH: Mr. President I have been asked to present the following resolution:

RESOLUTION.

WHEREAS, The Iowa State Dairy Association has learned with profound regret of the recent deaths of Orin Douglass of Boston, and William A. Gude of New York; be it

Resolved, That the President and Secretary be instructed, in behalf of the Association to express to their families and associates the deep sense of loss that we have met as an organization and our individual grief as members.

As we meet, Mr. President, on our annual convention from year to year, it seems that some bright and shining light has been taken from our midst, some man whom we could illy get along without, and I have no doubt that we often think what can we do without the aid, the encouragement and the comfort that their presence and their example has been to us.

For a score of years, for two generations or more of buttermakers, Orin Douglass was with us in our State and in our national conventions as a butter judge; a man who was there regularly to reach out his hand to help the buttermaker, ever ready to do everything and anything that was possible to advance the interests of the business in which you are most deeply interested. A few years ago he met with a very serious business reverse. The laws and courts permitted him to escape had he so desired from the indebtedness that hung over him at about thirty cents on the dollar, but, to the credit of his ancestry, to the credit of his manhood, to the credit of the trade that he represented, be it said that he paid every dollar with interest dollar for dollar and died honored and loved and respected by every business associate in the city of Boston and in the butter trade.

It is hard for me to speak of either Orin Douglass, born back in the hills of Maine in an adjoining township, a man who was almost a father to me when I came west, but here in this audience are men, Will Collyer, who served with him many times as a judge, Keiffer, Lumbard, Nietert and others who have been with him for years, who can fittingly testify to his worth as a man, a friend and a co-laborer.

But a few weeks have passed away since the wires flashed the news of Will Gude's death. His interest in and activities for this association are well known. Every heart echoed the words of eulogy that sprung from the lips of his associates. To me, he was more than brother. In my home is a boy wearing his name (God grant that he may prove worthy) and in that home, where he lavished the wealth of his affection, is a son bearing mine. Would that heart and brain could give expression to the association's loss, but mine are too full. I can not say more.

Motion seconded and resolution unanimously adopted.

THURSDAY EVENING SESSION.

Meeting called to order at 8 o'clock by the president and the program was opened by music by Mr. Jules Lumbard, who sang "Ocean Blue," "Child of the King," and by request repeated the "Rose Bush."

THE PRESIDENT: We are favored this evening by the presence of a man who is already known to you. He needs no introduction at my hands. He has had the welfare of the State of Iowa at heart for many years, and we will now listen to Professor McKay, of Ames.

ADDRESS.

PROF. G. L. M'KAY, AMES, IA.

Mr. Chairman, Ladies and Gentlemen: It is always gratifying to me to meet the dairymen of the State of Iowa. Last winter a prominent agricultural editor wrote an editorial criticising the Iowa Dairy Association. His complaint was that we met merely to have a good time. Now, I cannot see anything obnoxious or objectionable in having a good time as long as we are disseminating knowledge to dairymen of the country. Who deserves a good time any more than we do? We are the cream of the earth—at least, we are very much interested in cream. Therefore, if we get a little over-enthused, we should be excused.

It was said last summer that two prominent Iowans were traveling on the train, and that one was telling his fellow passengers about the great productiveness of Iowa, as a dairy State. I do not know if this was Mr. Wright or Mr. Shilling. He might have been a little over-enthused when he said: "Last year one of our dairymen made a million pounds of butter and a million pounds of cheese." Then noticing a skeptical look on the faces of his hearers he said to Mr. Smith, another Iowan, "Isn't that so? I refer to Farmer Brown." Mr. Smith replied: "I do not know precisely just how much butter and cheese Deacon Brown made, but I do know that he run twelve sawmills with the buttermilk from his plants."

Speaking from a serious standpoint, I believe that while the dairy business is increasing in this great State, we are not making the advancement that we should. It was my privilege, during the past summer, to spend some time in the coast states lecturing on dairying. I was surprised and astonished to find the progress that these people were making. In the State of Oregon dairying had increased five hundred per cent during the last five years, while the output of butter had almost doubled in the same time in California.

Possibly the principal reason that dairying is making such progress in the coast states is that these people have been growing what for years, thus robbing their soil of nitrogen, phosphoric acid and lime until the land became so impoverished that it would not produce wheat. I saw land out there that they told me would not produce over eight or nine bushels of wheat per acre a few years ago, and it is now producing from twenty to forty bushels per acre. This change has been brought about by farmers adopting dairying. A ton of wheat will remove $7.50 worth of fertilizing material from the soil, while a ton of butter will remove less than fifty cents worth. Today a ton of wheat has a market value of $22, while a ton of butter sells for $500, therefore, it is only reasonable that the intelligent farmer should dairy.

J. J. Hill, the sage of the Great Northern Railroad, and possibly one of the brainiest men on the continent, made a special plea, in a recent speech, on the necessity of conserving the fertility of the soil. He predicted that by the middle of the present century our population would reach 200,000,000. The salvation of this country depends on its agricultural resources. The future prosperity and happiness of the people depends upon the intelligent cultivation of the soil. We have seen land in this great State almost double itself in value, in the last ten years, and indications are that the next ten years may see land worth $150 per acre in this great corn belt of ours.

This means that dairying must increase. The cow is a more economical producer than the ox, and as the land advances in value, the question of economy must be the dominating factor governing our likes and dislikes.

As Professor Robertson has said: "Wealth may be defined as anything that administers to the wants or happiness of man, and the ownership and possession of which may be transferred from one person to another. Its original sources are the sun, soil, air, water, plants, animals and labor. It is the task of the agriculturist to so manage these agents and agencies as to obtain the largest and best service for himself and fellows from them. The outcome of true culture is the exercise of intelligent purpose in the activities of life; and that, in his occupation stamps the farmer as a man of real culture. It is a false idea that culture is found only in idleness and amid luxurious surroundings."

Our natural agricultural resources are equal, if not superior, to any other State in the Union. It is our boasted pride that we make more butter than any other State. I heard one of our leading congressmen make the statement, recently, that the value of our dairy and poultry business was greater annually than all the gold and silver produced in the United States and Alaska, and this statement is true. I think, however, that we get accustomed to hearing these big statements and rest on our laurels, imagining that we have reached the highest pinnacle possible in our line. Why, do you know that in some of the European countries they are dairying successfully on land worth from $400 to $1,000 per acre? The same markets are open to our people that are open to these people and no duty bars the way. The difference is right here; they are dairying intelligently with good cows. Their average is nearly 300 pounds of butter per cow, while ours is about 140 pounds per cow. We need a great awakening among producers of this State along intelligent lines of dairying; just such an awakening as has taken place among the corn producers.

About five years ago, in this State, you never heard much stir about corn, but today you hear of corn contests all over our State. Even in some of our banks a bunch of yellow corn hangs on the wall. This great awakening has set farmers to thinking and the result is better crops everywhere. Not so much that any new discovery has been made, but that the people have begun to think and act for themselves, and to apply more intelligent methods.

The Iowa Dairy School is placing one man in the field to do extension work, thus aiding farmers to weed out undesirable cows. Work of this kind, or the "Test Association," was started in Denmark some ten years ago and has spread over European countries. In Germany they have sixty-seven "Test Associations," and their annual milk production is 7,600 pounds per cow, or a gain of 1,380 pounds of milk per cow in five years; or a difference in profit of about $14 per cow annually. This is the result of intelligence. If we had ten or twelve such instructors in the field for a few years, I am satisfied that we would increase the output of dairy products, in this State, at least one-fourth, without costing the producer practically anything.

It is not so much the question today of keeping more cows as it is of keeping better cows and caring for them intelligently. What is needed today, more than anything else, is a better organization or more co-operation among the dairymen of the State. Take up any of our leading agricultural papers and it is seldom, if ever, that you see the picture of a good dairy cow, while invariably on the first page will be the cut of a fine beef animal. This is due to the fact that the beef men are beter organized and advertise their business more extensively. If you examine those papers carefully you may find toward the back a space of a few inches or possibly a column devoted to dairying. The influence of the press cannot be estimated. This was pretty thoroughly demonstrated, to my satisfaction, when I was at the coast states. I found that the leading dairymen were practically all readers of that magnificent paper called "Hoard's Dairyman." One night, after addressing a meeting on building up a herd, a rugged farmer came up to thank me for the short talk I had given and he asked me to guess how much butterfat per cow, his herd of twenty-one grade cows, had given. Of course, I failed in my guess, then he told me that they had produced 352 pounds of butterfat per cow. This statement was verified by the creamerymen who were there. I expressed some astonishment at this nice record, when Mr. Frohman said: "We read dairy literature out here, and endeavor to profit by its teachings, and furthermore, I am not satisfied even with this record." We have in this State and adjoining states some excellent dairy and agricultural papers that are doing good work for both the producer and the manufacturer, but when we see a paper that is supposed to represent the great dairy cause, having a special editorial at the commencement of the storage season, maintaining that the price of butter is too high, that instead of going into storage at 20c per pound it should go in at 18c, we naturally come to the conclusion that such a paper represents the cause of the buyer and not the producer, as such editorials have an influence in holding down the market price.

The price paid for butter during the past season has been high, but not any higher, and possibly not as high, as it should be. To satisfy myself thoroughly on this point, and to show to you that butter was not any higher than it should be, I took the make of a large gathered cream plant in Ontario, Canada, and compared it with the make of one of the highest selling as well as one of the best creameries in this State. This comparison was made from the middle of May up to September the first. The Iowa creamery I referred to sold their butter at a premium of two cents per pound. Now the prices I am quoting are the net prices paid for butter at the creamery in both cases. The gathered cream plant shipped their butter to the English market and no duty prevents us from doing the same. Both creameries received 20c net, during the last half of May. During the month of June the Iowa creamery received 20c net, and the Canadian creamery 21c. During the first half of July the Canadian creamery received 21½c and the Iowa creamery received an average of 21c for the month, while the Canadian got 21¾c for the last half. During the month of August the Canadian ceramery received 23c at home, and 22c for that sent abroad, while the Iowa creamery received 23c for the entire month's make.

Here we find that a gathered cream plant has actually out-sold one of the best whole milk creameries in the West. The creameries I have referred to are at Strawberry Point, Iowa, and at Owen Sound, Ontario. Now if a gathered cream plant in Ontario can out-sell a creamery that is actually getting two cents premium above New York quotations, how much will they out-sell the average Iowa creamery? When butter is quoted at 23c in Montreal and 24c in New York, the natural inference would be that the New York market was a cent higher than the Montreal market, when in reality the Montreal market is about one cent to a cent and a half higher than the New York market. The quotation at Montreal is usually f. o. b. cars nearest station, while the New York quotation includes freight, commission and cartage.

The quality of our Iowa butter should be so uniform that it could be shipped abroad at any time when their markets were higher than ours. We are making in Iowa today poorer butter than we made ten years ago. The quality of cream furnished to many of our creameries today is a disgrace to any civilized people. There has not been a week during the past season but what I have had from one to six letters lying on my desk, asking for first-class buttermakers at wages ranging from $60 to $125 per month. What is the reason for this clamor? It is the poor quality of cream that these buttermakers are compelled to accept, from which it is impossible for any maker, no matter how skilled he is, to turn out a first-class article. I tell you my heart ached for some of these buttermakers who have had to resign their positions through no fault of their own, but from conditions imposed upon them. There is no workman, no matter how skilled he is, that can produce first-class goods from inferior, low grade material. Then why should we expect buttermakers to make good butter from over-ripe or rotten cream?

The Department of Agriculture, as many of you know, has taken up the system formerly used by the National Convention, that of scoring butter and sending the criticisms to the makers. They have placed an expert buttermaker in New York and one in Chicago whose duty it is to score butter when desired, and offer suggestions to the makers as to improving the quality. This method has no doubt accomplished some good, but it does not go far enough. You cannot purify a stream by working at the lower end when its source of contamination is at the head. There is no one who understands the faults of the butter better than the maker who is battling with the adverse conditions.

The dairy schools have been for years training men to the best of their ability, but these men are unable to cope with conditions as they exist at the present time. I think I am safe in saying that from seventy-five to ninety per cent of the buttermakers of this country can produce good butter if the raw material is right. They may not be able to produce 97 or 98 butter, but they can produce 93 or 94 butter and the maker who can manufacture a uniform quality of this kind has no trouble in holding his position.

Our centralized plants have endeavored, during the past year, to meet these conditions by grading their cream 1, 2 and 3, and paying according to quality, but the avaricious greed of man, and the keen competition that exists, have rendered this grading almost useless. The result is that intelligence and sanitary methods are practically discarded by many of our producers. Why they have made a third-class grade I cannot understand, as butter made from such cream should have no place in our markets.

Many blame the centralized plants for present conditions. The centralizers are like many of the rest of us; they have endeavored to set too swift a pace. "Nature is filled with tendencies and obstructions. Extremes beget limitations, even as a river by its own swiftness creates obstructions for itself." So the centralizer is baffled just as much as the private or co-operative creamery. It is needless for me to say that hand separators are responsible for the deterioration in quality that exists at the present time. I have given this mater of quality a great deal of attention during the past year and I have come to the conclusion that the only thing that will improve the quality of our cream is compulsory education.

Now the first thing we need is an amendment to our dairy laws. I would have the laws so arranged that it would be a misdemeanor for anyone to skim cream from an unwashed separator and offer it for sale. I would also make it an offense to place a separator near a pig pen. It is just as necessary to have a law regarding cleanliness in milk and cream as it is to have a law regulating the cleanliness of our packing houses. We have a law now which condemns unwholesome cream, and holds the purchaser and seller liable. That word unwholesome is meaningless to me. I would not want to go on record as saying that butter made from any cream would be injurious to the health.

Having a law to remedy these defects, the next thing needed would be about ten or twelve good dairy inspectors. Now, I do not mean factory inspectors. I would rather call these men cream and milk inspectors. I would have them go to the cream stations and creameries; examine the milk and cream as it came in. I would then have them visit the farmers who are sending poor cream. I would not have these men work as detectives, but rather as educators; but if it became necessary to make an example of a man, who persisted in sending dirty cream, I think one or two prosecutions would go a long way to eliminate the troubles that now exist. The producer is not the only party at fault in this matter of cleanliness. It would be well to throw a searchlight occasionally on some of our creameries. We have arrived at the period in our dairy education when the slovenly buttermaker and the dirty creamery should not be tolerated.

Now I believe it is as possible to make good butter under the hand separator system as under the whole milk system, providing the separators are cleansed and scalded every time they are used and each lot of cream cooled before adding to it the previous lot. It should be unnecessary for me to say that the cream should be kept in clean vessels. It would only be a small piece of work to take the parts of the hand separator, that come in direct contact with the milk and cream, to the house, and there thoroughly wash and scald them. If these precautions are taken, cream can be delivered twice a week during the winter and three times a week during the summer, and be in a sweet condition. When a maker receives such cream he can pasteurize it and by the use of a good starter have it entirely under his control. Old cream, especially when it has been kept at a high temperature, frequently comes to the factory contaminated with molds and yeasts which render it unfit for the making of first-class butter. The mold and yeast flavors are quite characteristic of gathered cream butter. Particularly is this true where the cream is produced under the Gravity method. This is one of the reasons why an expert butter judge can invariably detect, or classify, butter made from gathered cream. It has been thought by many that this peculiar flavor was the product of bacteria. Investigations conducted at Ames indicates that molds and yeasts are mainly responsible for this stale, old flavor so commonly found in gathered cream butter. Pasteurization does not seem to remove or eliminate flavors of this kind. An ounce of prevention is better than a pound of remedies for curing. Therefore, low temperatures, frequent delivery, and sanitary methods in handling cream, will prevent the flavors referred to.

The question natually arises, how are we going to get these inspectors? We, who have been before the Legislature, know that it is utterly impossible to get appropriations for ten or twelve inspectors. Our legislators compare favorably with the legislators of any State, but these men are usually confronted with the problem of making one dollar cover the place that two should, as the askings are always greatly in excess of available funds. Unfortunately, we have a few representatives, who represent good agriculture and dairy districts, but vote against everything asked by those whose cause they represent, or rather misrepresent.

To raise the funds sufficient to cover expenses of inspectors, I would advocate that every creamery in the State should pay license according to the make, and that this license fund should be placed in the hands of the State Dairy and Food Commissioner. This would enable him to hire the necessary inspectors. Two mills on each pound of butter made in our creameries would about meet the required amount. Now I have talked this over with many of the central plant owners, co-operative and individual creameries, and I have yet to find the first man who did not favor this method. Such inspectors should be well posted on the underlying principles of dairying, including feeding and care of mik and cream. Now, this is a very serious question to the welfare of the dairy industry of this country, and I would like to see action taken at this convention on the advisability of adopting this method, then this winter we could meet the legislators and ask for the necessary protection to enable us to raise our quality of butter so that the brand "Iowa" would be sufficient guarantee to gain an entrance into any market. During the past year, two European experts have visited our school; one from Germany and one from Denmark, and they both commented on the poor quality of butter manufactured in the United States. In fact, one of them had the impression that we could not make good butter in this country. From what I have seen in European countries, I am satisfied that our best butter equals their best butter, and our makers are the equal, if not the superior, of theirs in intelligence and knowledge.

The future of the dairy business never looked brighter, and there never has been a time in our history when there was as great a demand for purity in food products as now. The consumption of milk is increasing very rapidly in all parts of the civilized world.

Milk in its natural state is one of the most perfect foods known to man; a balanced ration in itself.

I recently heard of a firm in Ohio that is putting up sanitary milk in small bottles and selling it at the rate of 20c a quart. This is simply a premium on cleanliness and intelligence.

Just think of the great increase we would have if everyone going into a hotel or restaurant could be sure of getting a glass of good, clean, wholesome milk, without preservatives having been used.

The consumption of milk, in our large cities, is constantly increasing. This means better prices and more prosperous times for all who are engaged in dairying.

Today the cow is queen of the animal kingdom, the milch cow I mean, and with the advancement of land she will be sure to hold her high position.

THE SECRET OF HARMONY IN A CO-OPERATIVE CREAMERY.

F. W. STEPHENSON, LAMONT, IA.

Mr. President, Brother Buttermakers and Ladies: I assure you that I am glad that I have been able to attend this convention at Cedar Rapids. I have never attended a convention in my life without gaining some information, some knowledge, that I have been able to go home and apply to better myself and make money for the corporation for which I have worked, whether a State convention, an annual convention or a convention of the Eastern Iowa Buttermakers' Association. After I have been to a meeting of this kind, after I have been to a place where they have been scoring butter, it seems to me that I can hardly keep out of it. I have never yet exhibited a tub of butter but I have been satisfied in my own mind that I have received benefit from doing it. It has been truthfully said that the student never rises above his teacher. So you and I as buttermakers of the State of Iowa can never influence our patrons to rise higher than we are ourselves along the line of cleanliness.

The subject on which I am to read a paper tonight is "How to Maintain Harmony in a Co-operative Creamery," and I would suggest that we, as buttermakers, put forth every effort to clean things up at the factory, because a buttermaker has no right in the world to preach cleanliness to his patrons when he has a dirty creamery himself. I would say, therefore, let us take these things home to ourselves; these things all go to maintain harmony in a co-operative creamery, every one of them.

Now I have a paper here that I wish to read if you will bear with me for a few minutes.

HOW TO MAINTAIN HARMONY IN THE CREAMERY

Is a subject upon which very little has been written or said. It covers so broad a field that the time allotted will not allow for a full and detailed paper. I will, therefore, touch on only a few of the more important conditions, and confine myself to harmony in the farmers' co-operative creameries, leaving the discussion which should follow to bring out further information.

Harmony is one of the great essentials in the creamery, if not the greatest. In fact, this is not only true of the creamery, but in every field of work. Without it, failure is the inevitable result, and I believe more creameries have been unsuccessful and actually failed or closed on account of a lack of this pulling together or harmony, than from any other one cause.

Let us for a minute take up the cause or causes, and I think the remedy will be more self-evident. If we familiarize ourselves with all of the various causes for this discord, it will become more simple to remedy them and, according to my experience, there are almost as many different remedies as you find different creameries, hardly any two of which present exactly the same conditions.

Almost all of the unharmonious conditions of a creamery may be classed under the following headings: Ignorance, prejudice, dishonesty, petty jealousies and incompetence. These are directly or indirectly responsible for most of the discord and jangle.

IGNORANCE.—How many times for lack of knowledge as how to understand a test or to realize the importance of an improvement expense have patrons and directors started a strife—many. In paying for butter or by the churn yield, when a competitor is paying for fat or the reverse, will very often lose you patronage and cause complaint. Too, a farmers' creamery for fear of adding a small expense, which, if pro-rated, would not be known or felt, will allow their plant to run down until it will require several hundred dollars to fix up what a few dollars spent at the proper time would do. Such a condition always finds its kickers, and the buttermaker is to blame for it all.

PREJUDICE.—I class this as no small factor, and a farmer with a notion is surely pulling the wrong way. The result of this usually is a neighborhood quarrel, which inevitably ends in demoralization, loss of patronage, change of officers and many times the buttermaker himself. From experience we all know, that to promote harmony, we should get away from all of these things.

I have known of dishonest methods causing friction and trouble, as, for instance, the manipulation of the tests or weights on the part of the buttermaker, or the watering of milk, the stealing of cream or skimmed milk on the part of the farmer, but of all the trouble a farmers' co-operative creamery is heir to, to my notion, a large per cent. comes through petty jealousies, neighborhood strife and clannishness. You have all seen the results—a community of several nationalities fighting for the control of a creamery. The jealousy of an individual of the success of a secretary, buttermaker or board of directors—or that getting-even feeling, sometimes the retaliation for having returned poor milk and cream, or because the buttermaker discovered you watering your milk and taking the top of the cream for the coffee, or perhaps making the weekly butter at the expense of the creamery. These will do more than all the rest to break up harmony and success, and you cannot have a good healthy creamery without everybody with their shoulder to the wheel, working for the good of the business unselfishly.

I have told you something of cause, and to a large extent blamed the farmers or officers. I now have a word to brother buttermakers, for we too are many times to blame for unsuccessful conditions. Do not take a creamery at a cut in wages and afterwards neglect or complain of more work than you can do, for you alone are to blame. Do not go fishing or take the afternoon nap and neglect to clean up or stir the cream. Don't be late in the morning, and make the early farmer wait for his milk. And it is also to be borne in mind, that we have many things to do not written in our contract. Your work covers many fields outside of mere buttermaking, and if you are not familiar with handling or repairing machinery, or with any of the other numerous details of your work, post yourself at once, for it is very easy this day and age to find out almost anything right at your own creamery door, and there is absolutely no excuse for you.

As matters stand in many of the local creameries at the present time, a buttermaker is apt to lose his position by being too particular about the very matters that he should be strongest in, but the buttermaker must have a free hand and full charge of the creamery and its details. This should be coupled with a harmonious working head, a few competent men who dictate the financial policy of the creamery. The smaller the number composing this head, the quicker will be the continued success. It naturally follows that the governing body of a creamery should be honest men with unselfish motives. To be sure, these men are many times poorly paid, but it seems to me that the value of a creamery as a home market for the farmers' product alone, is incentive enough for a manager or secretary, even if underpaid and though he may have to hear everybody's troubles, I say he should be public-spirited enough to bend every effort toward this success, and should be untiring in working out the many problems that are before him.

The success then of the farmers' creamery is that it has one head, competent, diligent and honest, an untiring up-to-date buttermaker who is absolutely fearless in maintaining right and insisting on all connected with him in doing their work promptly. Not forgetting that he should be consulted in selling the butter and in all changes or improvements in his plant. With this condition existing you will find very few mistakes made, and too, you will see from year to year the same buttermaker and officers laboring together in an unrewarded channel.

In speaking of this I wish to refer to something I read in one of the Minnesota papers last year. One of the instructors was writing to the buttermakers of the State and said something like this: "Boys, the annual meeting is drawing near; keep out of it." Well now I cannot agree with that man. If I have a board of directors that are a body of sensible men, if I have a secretary and manager that are sensible men, with good business ability, I believe it is my place as a buttermaker to do all I can to get that board of directors and that secretary and manager re-elected for the ensuing year, because you know at an annual meeting a name may be mentioned for some responsible position on the board, and in nine times out of ten, whether the man is competent to fill that place or not, he is elected. So I insist that it is my duty as a buttermaker to do all that lays in my power to see that we have a competent board. Furthermore, I believe if the buttermaker is a competent man, if he is willing to do what is right and has the confidence of the people, is what you might say the manager of the creamery. I do not believe that my board of directors at the Lamont Creamery would buy a thing without consulting me in regard to it, because who knows better what the creamery needs than the buttermaker? Who understands the needs of the creamery better than the buttermaker?

I just mention this to let you know that the buttermaker should feel that he has a perfect right to have a word in this matter in which he is interested. I know a short time ago I spoke to my board of directors. I said, "Boys, we need some improvements in the factory, our cream vats are getting in bad shape." They asked what I needed and I told them I needed a new cream ripener. They called a meeting, notified some of the supply houses, who had their representatives there to show their vats, and the Board said "There is nothing too good," so they bought a "Wizard."

Another thing, boys. There are a good many buttermakers here today; you have brought butter to the convention, it has been scored by Mr. Keiffer and I believe he has done us all justice. I would offer this suggestion—you know oftentimes the buttermakers make a mistake, I believe we often make a mistake by taking the praise and glory of a high score to ourselves—and I would suggest that we go home and put a short article in our local papers thanking the patrons of our creamery for the hearty co-operation they have given us in sending good milk, because you know we cannot make good butter without good milk, we cannot do it. So if you received a good score, made a good piece of butter, thank the patrons for helping you and it will tend to increase their interest in the creamery. It will help you and me as buttermakers; so the next time we will be able to make a better piece of butter. I sometimes think as buttermakers we work hard at the time of conventions to make a good piece of butter, and I believe this is the way we ought to work to make as good a tub of butter as we can today, strive as hard as we can to make a better tub tomorrow and make our creamery successful. I thank you.

THE PRESIDENT: It looks to me as though we have been having a good deal of talent in our midst and are just finding it out.

MEMBER: I just want to add one word. I don't know as I have ever made this statement before, but I want to say that I personally know that this man has been getting two cents premium at his creamery right along. I visited that creamery before Mr. Stephenson was there and they were not getting any premium whatever. I say this in justice to Mr. Stephenson.

THE PRESIDENT: The next on the program is a song by Mrs. Moorehouse.

Solo by Mrs. Moorehouse, of Cedar Rapids.

THE PRESIDENT: We are especially favored again this evening in that we have with us another man who needs no introduction at my hands. I am going to put him right up here before you, you will have time to use him and I want you to use him. That man is Mr. Keiffer, who used to be one of us and we claim him yet, although he is temporarily stopping in New York.

THE DEMANDS OF THE NEW YORK BUTTER MARKET.

P. H. KEIFFER, NEW YORK.

Mr. President, Ladies and Gentlemen; Members of the Iowa State Dairy Association: I am indeed pleased to be with you during this convention. I could have said that a good deal stronger before the scoring, but since the report came out on the scoring I feel a little shaky.

I am not going to make any preliminary talk because it is getting late and I will try and get onto the subject at once. The subject I am to speak on is the requirements of the New York butter market.

The requirements of the New York butter market, I take it that I am to speak of in the sense of good butter. New York has been educated, not by people that have been brought up in the study of milk and have gone into the creamery, passed through the different stages of the creamery from firing of the boiler to taking in milk and making the butter, watching the ripening of the cream, etc.; the standard that is supported in New York and the quality about which I am to speak were not introduced by those people; it was not introduced by the students in our dairy schools. The flavor that I am to speak about is a flavor that has come to the people there; it has come to them by long experience in handling this product from year to year. After the father died in the business the sons took it up. They knew nothing about these different flavors in butter that will exist if cream is churned at a certain stage; they only know the one flavor, and that is the flavor that they find keeps well, that has a snap to it, and that the consumer likes.

Now I have changed my ideas somewhat in scoring butter, and I have scored this butter here as nearly as I possibly could do in relation to the New York butter market. I have scored it just as near as though I was going into one of the commission houses to buy butter. I would ask for fancy butter and would be shown different lots, and when you bore into a tub of butter it comes to your mind that this is only a 90 butter, and in this case I spoke it out loud and said "Ninety." I said so because it would only pass as 90 in the trade. The New York people have almost too high a standard for quality. I do not think that is the case in New York only, but in other cities also, their standard for quality is too high for the butter that is being made now, for the bulk of the butter that is being made now. You take a piece of butter that is mild in flavor, rich and creamy, which a student in dairying would give a 97 or 98 score, because it tickles his palate and he thinks it perfect, that class of butter when found in New York would not score extras. It has got to have something about it that when you bring the trier up and smell of the butter you will think of *good* butter, and not as one of the speakers said today "buther."

If I could only tell you the kind of flavor they want there. They want a lactic acid flavor. That is the flavor they want, and I want to tell you it is a hard matter to produce that in creameries from now until spring. In the months of May, June, July and August the lactic acid flavor is quite pronounced in our butter down East, but after that season has gone by the lactic acid flavor fairly disappears, and one buyer goes to another and says, "there is no good butter on the market," just because it lacks that rich, high aroma.

Now I do not want to say, and do not want to go on record as saying, that this rich, mild creamy flavor is not a good keeping quality, but I want to go on record that it is a good keeping quality, providing there is enough lactic acid bacteria in there. There the trade has been educated to a higher grade of butter, that is, to a higher flavored butter, and we must meet the demand for it.

When you sample butter it should be free from any foreign flavor, an oily flavor, or vegetable flavor, or fishy flavor, or any flavor that would detract your attention from a good piece of butter, or a flavor that is obnoxious to the buyer. He does not want it. He just wants a flavor that makes him think of butter and not "buther." If you go to New York restaurants and New York hotels you will be surprised at the quality of butter they give you to eat. I have not yet been in a single restaurant or hotel but I got extra butter, butter that would score extra, 93, 94 and 95 points. That is the kind of butter they want you to produce in order to satisfy the best trade of New York City.

Leaving the flavor, we get down to body. The body of butter must be a stiff butter; it should be waxy; at the same time it should be close in grain, but not too close and smooth, so when you bore your trier it should be clean on the back of it. If a few "tears," as we call it, are present on the trier that is all right. That is no indication there is too much moisture or anything of that kind. That is acceptable to the trade and in fact it is better than to have it too dry. The body should be in such shape so that the merchant, when he sells it and puts his ladle in, he can cut it out clean. It should have enough moisture in it so as to do that. It should not be sticky; butter should not be overworked. Overworking has done more damage, I think, to the flavor of butter than any other thing I can think of. I have watched the body of the butter in particular, and I want to tell the buttermakers here that the body is responsible for almost one-half of the butter that is good to drop out of extras, just because it has been overworked. We used to have a lot of mottled butter and we preached against mottled butter, criticised the mottled butter and said "a trifle more working will overcome the mottles," which was true, but it seems to me this has been followed too far; in order to make sure they have allowed the rollers to whirl in the churns too long and have made the butter salvy and got it in such stage that it was greasy and fishy. I believe that would solve the problem of the fishy question—overworking the butter. I believe there is more fishy butter produced in the working of it than any other thing, and I believe if you had a hand worker here and worked your butter as you used to do it, carefully, work the salt in just a trifle, let the salt dissolve, then re-work the butter until the streaks disappear, you would then have a nice, stiff, waxy butter; I do not believe you would have any fishiness in that butter. I am speaking from my own experience, and also from the knowledge I gained last winter when I had the honor and privilege of scoring butter with Professor McKay for the Agricultural Department at Washington. There were a great many tests made last winter by the Agricultural Department, that is different lots of butter, and in every instance where the butter was worked more, in fact overworked by the addition of more salt, there was fishy butter. That was impressed on my mind because one package after the other showed fishiness. In the first place, the way I understand that butter was made was in the regular way, then salted, and part of that churning taken out; the balance was salted again and then worked again, and the last half of that churning was fishy. I have tried butter on the market and have found in one tub nice sweet butter on top and on the bottom it was fishy, from the asme creamery, but mind you out of a different churning.

I believe that a man can take the same cream, divide it into two lots, churn at the same temperature with the same acidity, and after he has added his salt and worked one properly and right and the other one overworked, that in the latter he can cause fishiness in the one churning of butter. There is no other way I can account for this one tub having a fishy flavor in the bottom and be all right on the top; and further there were two pieces of butter in there that were a trifle different in shade of the butter. This creamery has been sending us butter and some weeks it would be fishy, while again there would be no trace of fishiness, and by examining the body of the fishy butter closely, you would see it had no grain, it had been overworked. I believe it being such an easy matter to work butter nowadays, an easier matter than when I first learned the trade, when we used to work the butter with our muscle, that this easy way of working butter by simply pushing a lever on a churn and go about our work in the creamery and let it work itself, is responsible for this overworked, salvy, fishy butter. Another thing, I have never yet seen a piece of butter that was mottled that was fishy. That is another thing that proves to me that there is something in the working of the butter, and I think there is more in it than in anything else. The New York market does not want any butter that is overworked for the best trade, in fact they cannot sell it to the best trade, and if they do it will come back to them.

The next thing in order is the color. The color must be uniform; the color should be light for the New York market. There is not a single package of butter on exhibition at this convention that is light enough for the majority of buyers in New York. You will find that even if there are some defects in flavor or something of that kind, if you have the right color it will catch the buyer's eye and will pass; but if you bring up a red tub of butter, I do not care what flavor you have, he will not touch it. He will say, "I cannot use it;" so the color is the most important thing with every buyer on the New York market. For other markets it is different.

Then the New York market requires a medium salt. They want enough salt in the butter so it brings out the flavor, and not enough so it is in the least way gritty, or so it will be a very strong, briney flavor, and of course the salting should be regulated to suit the wishes of the man handling your butter. Those things, the color and salt, can be regulated by the man to whom you are shipping, but the body and the flavor you will have to regulate yourself

The next in order is the package. The package should be a clean package, should be a well made package. It means a good deal, a great deal. I think the fellow that we call "the man on the street" in New York, who usually writes a column or two in the New York Produce Review, has taken up this package question a great many times. He took it up when I was here in the West and I used to think he was talking too much package, that it depended more on the material in the package than it did on the package; if we could only get the butter in the package that the package did not cut so much figure even if there were a few hoops off of it. But the contrary is true; he was right when he said: "Look out for your package." You sell butter to a man, or say a single tub with broken hoops or a bad cover, and the chances are you have lost a customer if he does not send the butter back. If you sell it in a wholesale way, if you show a bunch of fine butter with hoops off the package, if the cover is in bad shape, the chances are the customer will not allow you to open the package to look at the butter. He will say, "I cannot use it." The package should be treated in such a way that when the butter is taken out it will come out smooth and clean; it should be treated so the package can be tipped over, the top taken off and the butter left standing, and the only way to do this that I have ever found in my buttermaking experience is to soak that package thoroughly. Put your package to soak at 12 o'clock noon and use it for packing the next morning. I mean by that, fill it full of water and see that it is kept full. If you get packages that are leaky, get a box made, a long box on the order of a trough, put your whole row of tubs into the box, weight them down and keep them in the water from 12 o'clock noon until next morning when you go to pack your butter. Soak the package well. Be sure to put clean water into this trough every other day at least, so the water will not become stale. Line the package with parchment paper. Do not send the butter to the market without lining the tubs because the trade has got so the demand is for the tubs to be lined, the appearance is so much better, and they want to see the lining come over the top of the tub a trifle. A great many people will not buy butter if the packages are not lined, so we have to line a great many tubs there because the butter maker has not lined them.

If anyone does not want to go to the work of soaking his tubs, the next thing is to paraffine them, and if that is done properly I think there will be no trouble; but if you paraffine you want the paper lining just the same as though you had soaked them.

There is one other thing that I want to talk about and that is this—it is impossible for a buttermaker, I do not care where he is located, to send a shipment of butter in which there is one tub of poor butter without its being found out in New York. The butter is shipped there to be consumed and in order to consume the butter the cover must be taken off; the butter must be dug out so as to see what is in the package. The commission man may not be able to find that. He does not go through every package he receives from you, but he goes through a number of them and he may not strike this poor lot, and by the time his customers strike it the commission man has already made his return to the creamery. The way the returns are being handled nowadays the creamery man is protected from all the mistakes that the buttermaker makes; the creamery man is protected because the commission man immediately sends a check for the lot of butter after he has gone through five or six tubs out of a forty tub shipment, and in that way pays for the mistakes the buttermakers make. If the buttermaker has a lot of mottled butter which is returned to the commission man, it is his loss. If the milk was not properly strained, screens kept in the windows of the creamery, and flies got in some of this butter, after it gets to the grocer and he digs it out and finds those flies, back it goes to the commission man. The commission man knows who made the butter, he knows the creamery, he keeps a record. Every tub of butter that comes to New York receives a lot number, and if any complaint comes line a great many tubs there because the buttermaker has not lined about that butter it is "lot so and so had flies in it;" "lot so and so we could not strip; we had to take the hoops off, the staves off to get at the butter." Those are all losses the commission man pays for that the creamery never knows about. Of course it is their own fault, it is the way their business is conducted. It is probably conducted on the other end just the same as the business is conducted on this end in the way of being so anxious to get cream that they will take cream that they know will make poor butter, but they are anxious to get it away from the other fellow, so they take it; and I think the same spirit is shown in New York.

Now Professor McKay gave you one of the best speeches tonight that I think I ever heard. You will all agree with me that he struck the keynote, and he made me think of what I was going to speak about, and that is getting the raw material in good condition. We have got to do one thing and our whole aim should be to unite in bringing together, you might say, the producer and the consumer. They are too far apart. The consumer and producer are too far apart as far as knowing what one wants of the other. The consumer wants good butter; the producer does not know anything about that because he can sell his cream if, as the expression was made tonight, it is rotten, he can sell it just the same, and he thinks the consumer is eating it, so he does not know that the consumer does not want it. It is forced on the consumer because he cannot get anything else. The amount of fine butter that is going to the city of New York is not enough to feed the New York people, not by a long ways. Butter that will score 93 will not by ten per cent, yes I can say seventy-five per cent, feed the people of New York. The greatest part of the butter, the whole make of butter you might say, that goes in there, is butter that is forced on the people; they have got to eat it because they cannot get the quality they want. If the prices were different—I will agree with what has been said in regard to that, with what the State dairy commissioner of Minnesota said last night—if the prices were different, if there was an incentive for this high quality of butter, if the demand came from the East that we would have to have this high quality of butter, we would get more of it. The demand must come from the East. We want good butter. We will not take anything else and will pay a good price for good butter. Do not keep down the market for good butter by throwing a lot of poor butter on the market. Let the market for good butter soar; the market for good butter should be so high that the people that have got the money and want that class of butter should get it, and if the market is so high on good butter that it will be five, six, seven, eight and ten cents above this poor butter, you will find the men here in the West getting busy right away to see how they can add onto their cream checks five, six or ten cents; but, as a man told me who visited New York and called at our store, the secretary of a co-operative creamery in this State, he said, "Keiffer, it does not pay me to make whole milk butter, because it costs me three cents a pound to haul whole milk to the creamery. I only have to take my cream twice a week now and at a trifling expense. I can stand a cut of three cents and make just as much money as I would make if I hauled my milk to the creamery." He was a good, straight, honest man, and I believed him and know it is is so because I have been here among you. The price of good butter certainly ought to be more than that difference if you are going to induce anybody to make good butter. There ought to be some incentive to make good butter, and the demand must come from the markets for good butter. I thank you.

THE PRESIDENT: Now, boys, you have Mr. Keiffer here and fire the questions at him. We can give ten or fifteen minutes to the discussion of this subject.

MEMBER: How about mold on butter?

MR. KEIFFER: The mold proposition is quite serious during the summer season, also during the fall and spring, quite serious, more serious than anyone here realizes. When a tub of butter is moldy that throws it out of the grading. No matter how fancy it was if it shows moldy and the buyer buys it of course he finds it out, for as I told you butter was made to be consumed and when the grocer cuts it out if he finds it moldy he returns it to the commission man and the latter must take it back. Moldy butter is a butter that you can not sell; it is a butter from which you have to take the tub, have to take the liner off, have to scrape it, reline it and then sell it and get it into consumption immediately, for if you do not let it stay in your warehouse or cold room ten days longer the germ that was on the butter begins eating right back into the butter and pretty soon it will be as bad as before. It is a plant that will grow and after the seed is planted there, unless you dig far enough into the butter (and the man scraping butter worth 26½ or 27 cents is pretty careful about scraping in too far and scrapes only far enough to get out the mold, because it is his loss as he has made returns to the shipper) the chances are if it is not immediately consumed it will commence to eat again and he has the same thing to go over. It is a big loss but can be prevented if you have a good cooling room, but that is one thing that the West does not have as a rule in all her creameries. There should be a good refrigerator in every creamery, a refrigerator that will bring the temperature down to 40 degrees; then from there it should go into refrigerator cars that have a temperature down to 40 degrees, and if taken to New York in these cars there will be no bother about mold. It is impossible to have mold if you treat tubs as I spoke to you about and keep the butter at a cold temperature until it is consumed, otherwise there will be a big loss.

MR. NEITERT: It seems you people have your troubles in New York. It appears that about 75 per cent of this butter is poor and the trade does not want it.

MR. KEIFFER: That is my opinion.

MR. NEITERT: Still it seems, if my memory serves me right, we have been unable in the last six, seven or eight years to find a creamery anywhere that did not get from one-half to one and one-half and one and three-quarters and two cents over the New York market for butter in New York. Now, if that is true I do not see how your friends down there can hold their purses on that kind of business.

Again, it appears that a great deal of butter goes to the New York market. Now, then, if that be true, and it also be true that the gentlemen you spoke of could afford to lose three cents a pound and still make more money than he could to have his butter made in a cleanly and wholesome condition, there is no incentive for that man to make a better quality of butter is there? Then he must be the one man I have not found yet that does not get a cent above New York quotations. I have inquired of a good many; I have visited most of the conventions we have held for a number of years, National and State, and I have yet to find a party that did not get a premium on his butter. Now the point

I am driving out in regard to this matter, gentlemen of the convention, is that the old adage is true today as it was since it was spoken first, that it is the survival of the fittest. I have heard Professor McKay make his splendid talk this evening and the point which he made and which I have tried to emphasize is that we should improve the quality of the raw product and, as has been suggested on the rostrum this afternoon by one of the national experts, the creamery should be subjected to inspection also. Now then this is a hard problem, it is a long one. It would take a long time to bring about all that is desired, but we must not be discouraged. We should try by every means that are fair, that are honorable and that are possible to accomplish to better the condition of the raw product.

Here is another point,—so long as you can find men that will buy the product and pay about the same price for it, will take that which they know is not right, which they know is deteriorating the quality of the butter and which in time, if insisted upon, will result in the disaster of the entire butter production, they will not get a better product. There is no question about it. You can not impose on the public all the time. As Lincoln wisely said "You can fool all the people some of the time and part of the people all of the time, but you can not fool all of them all of the time." That is true in this as in any other enterprise. If you are going to regulate the patron, you want to regulate the fellow that is a party to buying this poor cream; but it is true, and has been true for years, until we all work in harmony to produce a good article, and the people that handle this product in whatever market it is, I care not because they are all in the same boat, work in harmony to encourage the production of a good article we can not arrive at a satisfactory result.

THE PRESIDENT: Any more questions.

MEMBER: I want to ask if the tubs that are paraffined sell at their actual weight or must there be tare of 11 lbs., the custom in New York?

MR. KEIFFER: There is no regular standard of tare on tubs in New York now that I know of. I have only been in New York about seven months and I do not know that it is the custom for anyone to take off 11 lbs. tare on a tub, regardless of the weight of the tub. The lot of butter is weighed and the tare figured on the shipment.

MR. HAUGDAHL: I would like to ask Mr. Keiffer if it is a fact that the consumers of New York know what good butter is. Mr. Keiffer has made good butter, inspected creameries, and undoubtedly knows what good butter is, so I want to repeat the question,—do the consumers of New York know and appreciate good butter?

MR. KEIFFER: Well, I will have to answer in the affirmative, they do know it.

MR. HAUGDAHL: Why then can it be possible for commission men in New York to pay 1½ cents premium for butter where here scores a first, when three-quarters of the butter is scored a first? You know they are being paid one cent and more over New York quotations. How can that be possible?

MR. KEIFFER: I think you will have to go down to the New York market and get into the game to find out how it is possible.

MEMBER: That is a point I want to bring out. You ask nine out of ten buttermakers and they will all tell you they get one to two cents above the New York quotations for butter. That is a point I have wanted explained for several years.

MR. KEIFFER: I think I stated in my remarks that the consuming people in the East were forced to eat butter that was poor because there was not enough good butter to go around.

PROF. BOUSKE: I presume there is a certain amount of butter that scores higher than the minimum score for extras, say one or two points higher. Now will the New York consumers of butter buy this butter, eat it and be willing to pay more and more for this butter as it becomes better in quality above the minimum for extras. Will they pay more for it, the people who buy that butter and eat it?

MR. KEIFFER: So far the highest quotation is on extras and there is no other quotation that I know of.

PROF. BOUSKE: How do you prove the New Yorkers know good butter if they are not willing to pay for it? They pay the same for all that scores extra.

MR. KEIFFER: My friend does not seem to grasp the idea of extra. The scoring in New York on extra is the best butter that is made. Extra is butter that scores 93 and is the best butter that is made. You may, by taking your butter out of the churn just at the right time and churning it in the right time have a little more flashy flavor or something of that kind, but by the time it gets to New York and gets on the consumer's table he has a 93 butter when he eats it. There is nothing less than 93 butter spoken of as best butter, and that is what they call extras in New York.

MEMBER: The point I cannot understand is this. We have had a number of addresses on the better quality of Iowa butter, still nine out of ten get one to two cents above the market on their butter.

MR. KEIFFER: I will answer that by telling you a story. Here in the far West there are several institutions that are gathering raw material from the farmers or dairymen, are bringing it to a central place and making it into butter. They go to one man and get from him cream that is in value two and three cents less than the next man's cream, and yet both are paid the same price. It is the same story. It is right among you; you are paying the same price for cream that is not fit to make butter as you are for cream that will score 100.

THE PRESIDENT: Any one else?

MR. GAY MILLER: In regard to the mold, have you received any butter with the tubs lined and rubbed with dry salt? What effect does that have on the mold? I received a letter from my house a short time ago asking me to do this and afterwards they wrote me that it proved all right. I want to ask if you have had any butter shipped you in that shape?

MR. KEIFFER: I have never given any instructions and could not state by the looks of the package whether it had been treated that way. I do not know anything about it.

MR.. SAVERAID OF HUXLEY: I think I can very nearly answer that question. At my place I have a poor refrigerator and I have made a practice for the last three years of soaking the tubs, then rub with dry salt and put my liner on there. This summer my refrigerator has been getting poorer right along. It is a home made refrigerator, has been in use for eleven years and is all shrunk up so the wind blows through it. I can only ship butter twice a week. I shipped my butter to a commission house and they wrote and told me my tubs were fearfully moldy outside and they had to cut severely on them but they were free from mold on the inside, and that is the way I treated my tubs, so I think that is a pretty good proposition for keeping the mold out. If I had a good refrigerator I would certainly have a good looking tub outside.

MEMBER: Mr. Keiffer made a remark in regard to fishy flavor. He said that he found almost invariably overworking was the cause of fishy flavor. Butter should not be overworked in any case but he has left out one other consideration from which to draw his conclusions, and that is in that case he mentioned there was extra salt in it. I do not pretend to say that salt has a tendency to give a fishy flavor, but if Mr. Keiffer has solved that problem of fishy flavor by simply putting it to a case of overworking he has done something the investigators of every State have failed to do, and I would like the statement substantiated or in some way repeated that we may all be assured that this is the cause and the only cause for fishy flavor.

MR. KEIFFER: I only referred to the result in the instance of the experiment that was conducted by Chief Webster of the agricultural department at Washington. He conducted an experiment with overworked butter, took some of the butter out of the churn, put more salt in and worked it, and in every instance the second lot of butter in the churn was fishy flavor. Now butter on the market we are receiving has fishy flavor but not excessive salt. I have seen fishy flavor where the salt was very mild. It seems to get into an oily flavor and becomes fishy. I think and I am quite positive that overworking will produce fishy flavor but I do not say that it is wholly responsible for it, but I believe it is responsible for 90 per cent of it. Ninety per cent of the fishy flavor butter I think is brought about by overworking. That has been my experience.

PROF. WEBSTER: I am after any information that will help out on this problem of fishy flavor. The explanation that Mr. Keiffer has given is correct in regard to the condition of the butter experimented in by the Government.

Here is another question I would like to ask Mr. Keiffer, or anybody else who has had any experience with country butter or packing stock, which is worked to the consistency of lard and I have never had a case yet where it was fishy. There seems to be something too on the other side. Then on the salt question, I have had a case reported to me today of unsalted butter being fishy.

MR. KEIFFER: I saw a party in New York that I thought handled considerable packing stock; I asked if they found fishy flavor and they said they found a lot of it. That is where I drew my conclusions that they found it in packing stock and I believe where they found it was in butter that was over-worked. I am not ready to tell the cause for this. I think Chief Webster will be able to find out; they are after it and I think they will locate it, but I think we have got to the point where we know where to look for it, and I believe it is in the working of the butter.

MR. SMARZO: Referring to the shipment of unsalted butter which Mr. Webster says had the fishy flavor, I inspected that myself and found it overworked. Nearly all the overworked butter has a very strong fishy flavor and this unsalted butter had it. It was overworked very badly, so sticky you could hardly draw your trier.

MR. WENTWORTH: We cannot understand how for good Iowa butter they would not give one to two cents premium when we consider that those epicurean New Yorkers down there eat a cheese which makes self-respecting people hold their noses and the average Iowa yellow dog would not have. There is a lot about these things we cannot explain; we know they exist, but I dare say and believe that everything Mr. Keiffer has said is absolutely true; but we are still in a maze, and I think in the course of another twelve months, with the advantages he will acquire and the absolutely accurate knowledge he has of Iowa conditions from the cow to the refrigerator car, that he will be able to tell us next year a whole lot more about it, and we can go ahead and do business in the old-fashioned way and get ten cents premium for this nice butter when Professor Webster and everybody else gets things going right.

THE PRESIDENT: If there is anything the buttermakers of Iowa, and I may say the boys of Iowa, can be charged up with it is with loyalty to and appreciation of their friends. Since I have been your president it has fallen to my lot to perform a number of pleasant duties, many of them more pleasant than others, and if I were to tell you the truth of the matter I would say that I have never in my life been called upon to perform an unpleasant duty since I have been honored with the presidency of your organization. It has been a pleasure to serve you, but I have a duty to perform tonight, the pleasure of which is much greater than anything I have ever been called upon before, for I fail to find words to express it.

A few years ago we had a man come into the State, I think he came from up in Minnesota. Somebody said last night, I believe it was Mr. Wright, that all that was best Iowa contained. Iowa has always been reaching out for the best and we reached out and got a man from Minnesota. He came to our State, and by his perseverance and continually striving he became a light here, a leader, he became one of the highest prize winners, I will except no State when I say he became one of the greatest prize winners in the State of Iowa or of any State. His services were sought by the State of Iowa; he became an instructor; he traveled among your State creameries all over the State, and by his manner of working among you he gained the confidence of all of you to an extent probably greater than was ever gained by any other person; but his services became too great and valuable for Iowa even to hold. He was called to the city of New York, they had more money to pay for his services there than we had in the State of Iowa. I don't know how the most of you felt, but I want to say that I can only express my own feelings by saying that, when I learned that we were to lose Mr. Keiffer from the State of Iowa I felt that a calamity had occurred to the State.

The duty I have to perform this evening is that the boys of the State of Iowa want to express their appreciation and their friendship and the kindly feelings they have for Mr. Keiffer in a little remembrance that I now hold in my hand, and I want to say that there was never anything undertaken in the State that was more spontaneous than this has been, and the regret has been expressed to me time and time again that all the boys could not have been in on it, but we bought the best that we could. And I have the honor of presenting to Mr. Keiffer a fine gold mounted trier, an emblem of his business, of his industry and of his calling, as a token of appreciation and esteem he is held in by the people of the State of Iowa.

MR. KEIFFER: Mr. President, I am glad I made my speech before. Probably if I say nothing now it is the best speech I can make. I thank you.

BUTTER SCORE

Cedar Rapids, November 7, 8, 9, 1906

P. H. KEIFFER, JUDGE.

In the whole milk class E. E. Mittlestadt of Ryan, Iowa, won first and gold medal; score, 96. E. H. Homan of Waverly, Iowa, won second and silver cup; score, 95½.

In the gathered cream class A. Christensen, of Royal, Iowa, won first and gold medal; score, 93½. H. R. Bullis, of Dubuque, won second and silver cup; score 93.

No.	NAME	Flavor	Body	Color	Salt	Pkg.	Total
	WHOLE MILK						
3	Emil W. Koeneke, Hudson, Iowa	38	25	14½	10	5	92½
4	C. E. Brant, Fairbank, Iowa	36	25	15	10	5	91
7	John S. Smith, Preston, Iowa	38	25	15	10	5	93
8	Chas. L. Woodworth, Waterloo, Iowa	36	24½	15	10	5	90½
9	I. R. Moon, Finchford, Iowa	37½	25	15	10	5	92½
10	A. E. Robertson, Center Junction, Iowa	37	24	15	10	5	91
12	H. E. Forrester, Fredericksburg, Iowa	37	24½	15	10	5	91½
14	Robt. Wagner, Randalia, Iowa	38	25	15	10	5	93
16	W. D. Wenthe, Sumner, Iowa	38	25	15	10	5	93
17	L. L. Flickinger, Fredericksburg, Iowa	37	24½	15	10	5	91½
18	J. J. Ross, Clarksville, Iowa	37	25	15	10	5	92
19	J. D. Main, Greenfield, Iowa	37	24½	14½	10	5	91
23	G. W. Wardel, Benson, Iowa	37	25	15	10	5	92
24	Cecil L. Mills, Sumner, Iowa	38	25	15	10	5	93
27	Wm. D. Kucker, Fairville, Iowa	38	25	15	10	5	93
28	F. D. Daniels, Fairbank, Iowa	37½	24½	15	10	5	92
29	H. C. Hemenway, Waubeek, Iowa	36	25	15	10	5	91
30	A. J. Spohn, Miles, Iowa	39	23½	15	10	5	92½
31	J. B. Whelan, Elma, Iowa	37	25	15	10	5	92
33	F. W. Stephenson, Lamont, Iowa	40	24	15	10	5	94
34	C. B. Bracy, Maynard, Iowa	38	25	15	10	5	93
35	C. H. Capper, Westgate, Iowa	37	24½	15	10	5	91½
37	J. P. Cooper, North Buena Vista, Iowa	37½	25	15	10	5	92½
38	F. M. Zell, Sumner, Iowa	37	25	15	10	5	92
41	C. H. Cleveland, Mason City, Iowa	38	25	15	10	5	93
46	A. M. Whitney, Whittemore, Iowa	38	25	15	10	5	93
47	Wm. C. Dubles, Fayette, Iowa	37½	24½	15	10	5	92
49	C. C. Bomberger, Dunbar, Iowa	38	25	15	10	5	93
50	A. H. Bentz, Delhi, Iowa	38	25	15	10	5	93
52	R. D. Sweet, Plymouth, Iowa	38	25	15	10	5	93
53	Joe P. Bogh, Rutland, Iowa	37½	25	15	10	5	92½
55	W. A. Thayer, Langdon, Iowa	39	25	15	10	5	94
56	Chris. C. Nelson, Exira, Iowa	36	25	15	10	5	91
62	E. F. Lowe, Marcus, Iowa	38	25	15	10	5	93
63	Lauritz Larson, Rockwell City, Iowa	38	24½	15	10	5	92½
65	A. J. Widdel, Dewar, Iowa	35	25	15	10	5	90
69	C. W. Davis, Ashton, Iowa	38	24	15	10	5	92
70	A. E. Banta, Wheatland, Iowa	38	24	15	10	5	92
71	Soren Kristensen, Scarville, Iowa	38	25	15	10	5	93
76	Marinus Anderson, Curlew, Iowa	37	25	15	10	5	92
79	Geo. E. Jensen, Parkersburg, Iowa	37	25	14½	10	5	91½

BUTTER SCORE—CONTINUED.

No.	Name	Flavor	Body	Color	Salt	Pkg.	Total
80	John G. Ellinger, Applington, Iowa	37	25	15	10	5	92
81	H. H. Colbert, Menlo, Iowa	36	25	15	10	5	91
86	O. H. Buehrer, Alta Vista, Iowa	39	25	15	10	5	94
87	Ed. Capper, Alpha, Iowa	36	24	15	10	5	90
88	Gay Miller, Delaware, Iowa	38	25	15	10	5	93
89	O. W. Hicks, Guernsey, Iowa	35	24	15	10	5	89
91	C. S. Payne, Coggon, Iowa	39	25	14½	10	5	93½
92	Wm. Kallenback, Bremer, Iowa	37½	25	15	10	5	92½
93	W. A. Stone, Central City, Iowa	38	25	15	10	5	93
94	T. A. Storwick, Lake Mills, Iowa	40	25	15	10	5	95
96	H. A. Griese, Readlyn, Iowa	38	25	15	10	5	93
98	E. A. Guwangen, Scarville, Iowa	37	25	15	10	5	92
99	J. B. Feldman, Dyersville, Iowa	38	25	15	10	5	93
100	J. F. Burrets, Radcliffe, Iowa	36	25	15	10	5	91
102	Earl E. Mittlestadt, Ryan, Iowa	41	25	15	10	5	96
103	John Baumger, Ladora, Iowa	37½	25	15	10	5	92½
110	J. E. Lauridsen, Pomeroy, Iowa	37	25	15	10	5	92
111	R. J. Saveried, Story City, Iowa	39	24½	15	10	5	93½
113	L. C. Peterson, Story City, Iowa	38½	25	15	10	5	93½
115	Johanes Johansen, Exira, Iowa	38	25	15	10	5	93
116	J. T. Hanna, Lone Rock, Iowa	38½	24½	15	10	5	93
117	G. A. Palmer, Aplington, Iowa	38	25	15	10	5	93
118	J. P. Nielson, Brayton, Iowa	38½	25	15	10	5	93½
123	N. H. Knudsen, Emmetsburg, Iowa	....	24	15	10	5	92
124	S. W. Laird, Walker, Iowa	36	24½	15	10	5	90½
126	T. A. Clark, West Bend, Iowa	38	25	15	10	5	93
127	Wm. Meier, Denver, Iowa	35	25	15	10	5	90
130	J. O. Miller, Milford, Iowa	36	24½	15	10	5	90½
132	Jas. Romine, Urbana, Iowa	37	25	15	10	5	92
133	O. F. Green, Des Moines, Iowa	36	25	15	10	5	91
134	B. C. Iliff, Manly, Iowa	37	24½	15	10	5	91½
136	P. Christensen, Oliva, Minn	36	25	15	10	5	91
137	R. S. Bergsatuer, Northwood, Iowa	38	25	15	10	5	93
139	O. F. Courbat, New Hartford, Iowa	37	25	15	10	5	92
141	D. H. Mohler, Ellsworth, Iowa	38½	24½	15	10	5	93
143	N. H. Trumble, Alden, Iowa	36	25	15	10	5	91
144	C. A. Newell, Irvington, Iowa	38	25	15	10	5	93
145	J. R. Jones, Iowa Falls, Iowa	38	25	15	10	5	93
146	A. Kindberg, Fredsville, Iowa	38	25	15	10	5	93
149	Anton Smith, Luxenburg, Iowa	36	24½	15	10	5	90½
150	M. J. Mansager, Steamboat Rock, Iowa	38½	25	15	10	5	93½
152	T. M. Borglum, Nemeha, Iowa	36	25	15	10	5	91
154	L. M. Tysver, Goldfield, Iowa	37	24½	15	10	5	91½
155	K. T. Naa, Slater, Iowa	36	25	15	10	5	91
156	T. E. Dilger, Stout, Iowa	38½	25	15	10	5	93½
157	E. H. Homan, Waverly, Iowa	40½	25	15	10	5	95½
158	Chas. T. Elliott, Cascade, Iowa	39	24½	15	10	5	93½
159	Julius Bruner, Charles City, Iowa	37	25	15	10	5	92
161	C. M. Ross, Oelwein, Iowa	36½	25	15	10	5	91½
165	Frank Bruner, Charles City, Iowa	38½	24½	15	10	5	93
167	C. A. Day, Sumner, Iowa	37	25	14½	10	5	91½
169	W. C. Frank, Forest City Iowa	38	24½	15	10	5	92½
170	H. C. Ladage, Waverly, Iowa	36	25	15	10	5	91
174	C. N. Hart, Zearing, Iowa	37	24	15	10	5	91
182	Geo. W. Campbell, New Hartford, Iowa	37½	24½	15	10	5	92½
183	Peter Larson, New Hartford, Iowa	38	24½	15	10	5	92½
184	J. P. Johnston, Bristow, Iowa	36	25	15	10	5	91
	GATHERED CREAM						
2	J. T. Chapman, Dike, Iowa	37½	24	15	10	5	91½
5	Oscar Harvey, La Porte City, Iowa	36	24½	15	10	5	90½
6	J. C. Jensen, Wallingford, Iowa	35	24½	15	10	5	89½
11	C. B. Berst, Welton, Iowa	36	25	14½	10	5	90½
15	Ira O'Neil, Clarion, Iowa	35	25	15	10	5	90
25	R. N. Morrell, Ottumwa, Iowa	35	25	15	10	5	90
26	E. Rice, New Albin, Iowa	34	25	15	10	5	89
36	Iver Barlow, Calmar, Iowa	34	25	15	10	5	89
42	O. W. Dubbs, Little Rock, Iowa	35	25	15	10	5	90
43	A. Christensen, Royal, Iowa	38½	25	15	10	5	93½
44	T. Smorenburg, Pella, Iowa	37½	25	15	10	5	92½
45	Hartley Creamery, Hartley, Iowa	38½	24	15	10	5	92½
48	J. A. Barker, Luana, Iowa	34	25	15	10	5	89
51	John Leotscher, Waupheton, Iowa	35	25	15	10	5	90
54	V. V. Johnson, Burr Oak, Iowa	36	25	15	10	5	91

BUTTER SCORE—CONTINUED.

No.	Name	Flavor	Body	Color	Salt	Pkg.	Total
58	Guy Thomas, Clear Lake, Iowa	35½	25	15	10	5	90½
61	H. R. Bullis, Dubuque, Iowa	38	25	15	10	5	93
64	T. Herbert Lund, George, Iowa	37½	25	15	10	5	92½
66	G. A. Bristol, Primghar, Iowa	37	25	15	10	5	92
67	G. T. Shanun, State Center, Iowa	38	24½	15	10	5	92½
68	T. D. Shifflett, Bradgate, Iowa	37½	24½	15	10	5	92
74	Bert McGriff, Redfield, Iowa	35	24	15	10	5	89
77	C. E. McIntire, Adair, Iowa	38	24½	15	10	5	92½
78	Sig Kluvesend, Osage, Iowa	34	24	15	10	5	88
82	H. C. Nelson, Inwood, Iowa	36	25	15	10	5	91
83	John McLain, Fairfield, Iowa	37	25	15	10	5	92
90	C. R. Wilder Monticello, Iowa	36	25	15	10	5	91
97	Frank Francisco, Sheldon, Iowa	36	25	15	10	5	91
105	J. F. Sharp, Newell, Iowa	36	25	15	10	5	91
106	H. M. Crocker, Sioux City, Iowa	35	25	15	10	5	90
108	Geo. H. Dushane, Osage, Iowa	36	24½	15	10	5	90½
114	F. R. Palmer, Hartwick, Iowa	36	25	13	10	5	89
120	Jay Broderick, Rock Valley, Iowa	36	24½	15	10	5	90½
122	R. M. Pressey, McGregor, Iowa	34	25	15	10	5	89
131	T. L. Case, Reinbeck, Iowa	37	25	15	10	5	92
135	John Beck, Goldfield, Iowa	34	24	15	10	5	88
142	F. J. Mabie, Terrill, Iowa	35	25	15	10	5	90
147	P. O. Knutson, Thor, Iowa	33	25	15	10	5	88
151	Ben Frank, Spencer, Iowa	33	25	15	10	5	88
153	J. C. Hall, Creston, Iowa	36	25	15	10	5	91
166	B. T. Soles, Fern, Iowa	37	25	15	10	5	92
172	F. X. Saucer, Fillmore, Iowa	36	25	15	10	5	91
178	A. M. Frandsen, Linn Grove, Iowa	38½	25	14	10	5	92½
180	Frank Sherman, Littleport, Iowa	33	25	15	10	5	88

THE PRESIDENT: We will now stand adjourned until 10 o'clock tomorrow morning.

FRIDAY SESSION.

November 9, 1906.

Meeting called to order at 10 o'clock by President Shilling.

Piano solo—Miss Agnes Kouba, encored.

THE PRESIDENT: In addition to the subscribers to the fund of the association, we have received several since our program was issued and they have not received proper credit in the printed programs. Therefore I will read you the contributions we have received since then.

Wells-Richardson Butter Color Co.	$25.00
Heller & Merz Company	10.00
A. H. Barber Company	5.00
Chicago Co-operative Coal Company	5.00
Miller-Tyson Company	15.00
S. B. Friday Company	5.00
Exhaust Steam Purifier Company	5.00
G. W. Kennedy	5.00
	$75.00

I said last night that I had never yet to perform an unpleasant duty since I have been president of your association, and I have the first little unpleasant duty to perform this morning by reading the following letter. I promised you last night that Prof. Curtiss would be here and we supposed he would as he was on the program and had accepted the invitation to speak, but this morning we received the following letter by special delivery:

AMES, Ia., Nov. 6, 1906.

MR. JOHNSON, *Secretary, Iowa Dairy Association,*
CEDAR RAPIDS, IOWA.

Dear Sir:—I regret very much that I shall not be able to attend the meeting of the Iowa Dairy Association at Cedar Rapids this week. I am obliged to leave tonight for Baton Rouge, Louisiana, to attend the annual meeting of the American Association of Agricultural Colleges and Experiment Stations.

The Iowa State College joins Des Moines in extending a cordial invitation to the Dairy Association to hold its next meeting there, with one day's session at the college. It is now ten or twelve years since the association held its last meeting at Ames. Through the general interest and splendid co-operation of the Iowa Dairy Association we now have a modern, well equipped dairy building that is a credit to the important interests which it represents and it will be gratifying to us to have the dairymen of Iowa visit the institution again and inspect the improvements and new facilities for dairy work.

The dairy farm will be equipped and in running order at that time.

With kind regards and cordial greetings to the buttermakers and dairymen of Iowa, I am, Very sincerely yours,

C. F. CURTISS.

THE PRESIDENT: You remember there was one committee that I failed to appoint, the legislative committee. As I have said on former occasions, we have invariably tried to pick for that committee men who would work and go up to Des Moines at the time we need anything, regardless of whether those men were buttermakers, dairymen or anyone else. I have appointed that committee as follows:

H. J. Neitert, F. A. Leighton, W. E. Smith, Prof. McKay, E. M. Wentworth.

MR. JOHNSON: I would suggest to the members of the association that S. B. Shilling be added to this committee, and make that as a motion. Seconded and carried.

THE PRESIDENT: I want to say now that we must not allow the work we have undertaken of securing an appropriation lag. There was a suggestion made by Prof. McKay yesterday, while it may be up hill work, even if we do not accomplish anything now we must not quit, since we got the matter started. We have to agitate and agitate that question and after a while we will get it. They cannot keep us out of it forever. We need it; it is a just demand on our legislature. We will return it to the people of Iowa ten thousand times over and I want to say to that committee that we must not lay down; I want to say to the buttermakers to go home and agitate the question. Although we do not know the class of people we will have to deal with this winter at the coming legislature, I believe we will be able to do some good. The fact is we had been before some of the members of the last legislature so often that they were sick of seeing us and gave us any kind of promise in order to get rid of us.

The first on the program this morning will be a paper by Mr. F. L. Odell on suggestions for the improvement of Iowa butter, and I hope it will bring out a good discussion.

SUGGESTIONS FOR THE IMPROVEMENT OF IOWA BUTTER.

F. L. ODELL, DES MOINES.

Mr. President, Ladies and Gentlemen: It is with some reluctance that I stand before you today and in my weak way attempt to make a few remarks. I feel somewhat like a Yale student did at one time when asked to make a speech. The hall was crowded with learned men, far his superior, and beginning he said, "Washington is dead, Lincoln is dead and," hesitating a few minutes, "I begin to feel rather sick myself." The doctor says to his patient, "Take this prescription, it will either kill or cure you." "But supposing it kills me?" says the patient.—"Nothing ventured, nothing gained; my motto is: 'No cure, no pay,' so you see I am taking as many chances as you," so with my few remarks if I kill you I will get no pay.

The subject assigned me is suggestions for the improvement of Iowa butter.

Suggestions on what?

Improvements of Iowa butter. A broad subject; yes; and a mighty hard one to handle.

Perhaps my suggestions may not be in order. But if I tell you some cold facts, do not blame me for it.

I shall speak from observation; of the conditions I have met with since I have been on the road. When I was thinking over this matter I considered that the every-day methods used in a number of creameries would be the most practical. Because they are practical methods used every day in butter making.

I have found a great number of creameries that are up to date, so to speak. The buttermaker trying his best with head and hands to further the progress of the plant; using starters; has the confidence of his patrons, the creamery is neat and clean, everything in order, making good butter; creamery paying good prices; the business grows; the patrons speak a good word for their creamery and buttermaker. To such as these I make no suggestions; and did you know such a buttermaker is a jewel?

I shall allude my remarks to those that are neglectful with their duties, letting opportunities pass by that they could improve; and to the cream producers of the State.

In a great many places the buttermaker is handicapped, and places where the buttermaker handicaps the conditions.

I find there are creameries where all *whole milk* is received. The buttermaker does not use any starters; perhaps a starter can setting to one side, rusting out; has everything to do with if he wants to. Thinks starters are not much benefit, too much extra work, and where whole milk and hand separator cream are taken in, following the same rule. No starters. no pasteurization. Natural conditions ripens cream. Nothing done to improve the quality; cools down the cream and churns it. If conditions are favorable he may have a very good piece of butter; if not, who is too blame.

SUGGESTIONS FOR THE IMPROVEMENT OF IOWA BUTTER.

Why does not this buttermaker take advantage of his conditions and make starters, control his cream the best he can; get his head in the game and he will have a chance to win. These are actual facts existing in a great many creameries today, where better butter could be made if they would only improve the opportunities they have, but instead they are setting in the back pew, following the same old rut day after day. These are the places where the buttermaker handicaps the conditions.

Then again, we all know there are places where the buttermaker is up against it. If he wants to improve his butter he can not; has nothing to do with. The creamery board do not believe in letting loose of any money, only to go into their own pockets. This kind of a creamery is where a buttermaker is handicapped. This kind of a creamery is where the buttermaker has to take in all kinds of cream, good, bad and indifferent, hand separator, water separator and gravity; dumps it all into the same vat, cools it down and churns it. When he is through, what has he got? Butter, of course; good or bad. Again, suggestions for the improvement of Iowa butter. When these creameries found it necessary to change from whole milk to hand separator cream they took out their factory separators and practically all the machinery they had left was a vat and churn. It would then have been in order to put in a pasteurizer and pasteurize their cream, and use a good heavy starter. It would then have been in order for the buttermaker to suggest these things; good suggestions for the improvement of their butter.

The farmers as a rule know nothing about these methods, believing that cream is cream and butter is butter. Suggestions are good, but practical methods are better. Too many creameries seem to go through the form of butter making; use no practical methods.

I will give you a few illustrations:

This creamery takes in all kinds of cream, do not grade it, hand separator, water separator and gravity, dump it all into the same vat; everything goes; pay the same price for bad cream as they do for good; do not pasteurize or use a starter. The buttermaker told me he did not think it would pay to use a starter; too much work. Churned the cream at 58 degrees, butter came soft; flavor bad. I asked them what price they received for their butter. They told me any price they could get. Sometimes a premium, sometimes market quotations, but more often below.

Another creamery of the same kind received all kinds of cream, regardless of quality; dumped it all into the same vat; did not pasteurize or use a starter. This buttermaker did not know anything about starters. Creamery in a dirty, unsanitary condition. Drain bad; gave back that ill-begotten smell, and the butter! Shall I tell you it was a nice, creamy piece of butter? It was the very contrary.

These are facts as they actually exist.

It seems to me a fit place to make these remarks. If we are going to have improvements in Iowa butter we have got to have improvements in some of our creameries. If we are going to have improvements in Iowa butter we have to have improvements in some of our buttermakers. If we are going to have improvements in Iowa butter we have to have some improvements in the quality of cream delivered. If we are going to have improvements in Iowa butter we will have to have more assistant dairy commissioners to work the State. It is an established fact that two assistant dairy commissioners can not right the evils of delivering bad cream all over the State. We are a mere drop in the bucket, as it were.

It is necessary that the State should have men to work in the country among the farmers; examine their separators, look after the cleanliness and where they keep their milk and cream; teach them what they must do to deliver better milk and cream. Then if they will not heed the law, show them where they are. We all know good from bad; right from wrong. If a patron is told how to care for his milk and cream and that he must deliver it in good condition, and does not, then he should be compelled to face the law, and not until we get matters in this condition are we going to see any great improvement in Iowa butter.

Another creamery, which I visited, was quite the reverse from the two I just mentioned. They received whole milk and hand separator cream; everything was neat and clean. The process of buttermaking was from a standpoint of "cleanliness and skill;" taking advantage of every little detail. Improving every opportunity as it presented itself; making good butter; paying good prices; patrons satisfied. I offered a man a dollar if he could put his hand on a grease spot in this creamery, and he could not find one.

I want to give another creamery for comparison. Receives whole milk and hand separator cream. This man used a starter. Creamery dirty beyond description; bacteria grew there in countless numbers. The engine room looked more like a cesspool than anything else; a ladder stood in there and leaned against the wall. Believe me or not, this ladder was submerged to the first round in filth. There was a plank laid on brick so one could walk around and not "mire" down. Improvements for Iowa butter. In the name of demons below, what would you do?

Another place where all cream was received, emptied into a vat, cooled down and churned; creamery frightfully dirty; did not pasteurize or use a starter. Within ten feet from creamery a hog lot, containing from 50 to 100 hogs were kept. The aroma from this place was something terrific. Flies in countless numbers. It seemed that every fly had a duty to perform; flying from creamery to hog lot and back again; wade around in the hog wallow and then to the cream vat; washed the mud off their feet in the cream. Regular feet washers. Inoculation was a part of their business. Improvements for Iowa butter!

Here is a creamery I am proud to make a statement from. Receives all hand separator cream; pasteurize and use a starter; creamery neat and clean; had a place for everything, and everything in its place. Buttermaker could go into his creamery any dark night and pick up any tool he wanted. Making good butter; paying good prices. In the past two years this creamery has had a remarkable growth; business increasing every year. Here is a man helping improve Iowa butter. What a contrast between this creamery from the one before it. Improve the opportunities that you have. You may think that you are not doing very much, but you have tried. It is the man that takes advantage of the situations as they present themselves that wins. If you cannot have a "starter can" use a "shotgun can." If you cannot have everything you want, take advantage of what you have.

I was in a hand separator creamery where the buttermaker could not get any whole milk to make a starter. Instead he made arrangements with some of his patrons to bring him some "sweet, thin cream." With this he made his starter, and a very good starter he made from it. This is an example of what you can do if you want to. This man took advantage of the conditions.

At a convention of this kind the hand separator gets its share of abuse. There is no use going into any argument about the hand separator. We all know the standing of the machine. It is the people that are abusing them. Some are washed every time they are used; some once a day, and some whenever the spirit moves them. Some keep them in a nice clean place; some in barns, and some close to a hog pen where it will be handy to feed the hogs the skim milk; they want things handy. Where the latter conditions exist we will not have any improvement in Iowa butter.

As I before stated, we should have more commissioners in the field. Line up this hand separator proposition and get a better grade of cream. You will then commence to see improvements in our butter. If the people are aware that a dairy commissioner is working in their vicinity they will be mighty careful what kind of cream they deliver, and mighty careful where their separator is kept.

It is impossible for two men to make a thorough canvass of the State and keep things lined up as they should be. I am willing for my part to do anything I can; go anywhere, if I can help improve Iowa butter. My interest is in this grand old State of Iowa.

I want to make one more remark in regard to starters. It is a fact that not one-half of the buttermakers are using starters. At creameries where they have every advantage in the world; plenty of milk; plenty of water; plenty of room, perhaps a starter can setting to one side. Too much work; do not believe a starter does any good; think they can make as good butter without as with. I also find some butter-makers who do not read any dairy papers, going along in the same old rut; the same old grind day after day; do not want to make any change in their way of making butter; regular "standpatters." They will wake up some morning and find the band wagon has passed on before. The procession has formed and the rank and file is full of men who are experts in their profession.

In conclusion, let me say that my suggestions for the improvement of Iowa butter are, more parctical methods, taking advantage of the conditions as they present themselves. More buttermakers using starters; a better grade of cream, and more assistant dairy commissioners to work in the State.

I thank you.

THE PRESIDENT: Now, gentlemen, we have a few minutes to ask Mr. Odell some questions.

MEMBER: Mr. Odell stated that 50 per cent in the State did not use starters. I think there are not 50 per cent in the house that do not.

MR. ODELL: That may be true in this audience, but the statistics show that 50 per cent in the State do not.

MR. HATHAWAY: At what temperature do you consider it best to pasteurize gathered cream?

MR. ODELL: That varies according to the quality of the cream. If the cream was not very sour I would not pasteurize above 160 to 165; if quite sour or old cream 180 to 185.

GAY MILLER: Lots of the boys say they want a fifty-gallon starter can, others say a thirty-gallon can. I would like to ask Mr. Odell how much starter he would consider advisable for a creamery receiving 18,000 lbs. of milk? The question sometimes comes up that we are using too much starter.

MR. ODELL: Twenty or thirty per cent. I do not believe you can use too much starter. Even 35 per cent of good starter will do great deal more good than 10 or 15 per cent, but if you have a poor starter I would not use that much. I find the average size of a starter can is fifty gallons.

Mr. Miller: My reason for asking was that I had heard so many say, one ought to have a fifty-gallon can. If a man is making good butter with a thirty-gallon starter can he is doing all right. I believe a number of buttermakers are making a mistake in buying a fifty-gallon can to make twenty-five or thirty tubs of butter. I think we have too much poor starter used.

Mr. Keiffer: I would suggest from my past experience that each buttermaker would use his head in the game and use it on the starter that he thinks he ought to use. For instance in a whole milk plant 12 or 15 per cent starter used in good milk or cream will be sufficient to hasten the ripening of that cream in due time so the man can get through with his work and cool it down in the evening. If he is getting poor milk or cream and is an able man who understands the use of starters, understands the nature of bacteria, that man can use a good deal more starter; he can use 25 per cent starter in order to overcome those bad bacteria that are in the cream; but if he has good milk and good cream it takes less to ripen that and put it in the right condition than where he has poor material. So I think each buttermaker should use his head in the game and study that question. There is no particular gain that I can see for a buttermaker to use 30 per cent starter in good cream or good cream that is pasteurized. I do not see where his gain would be. After he inoculated that with good bacteria they will predominate and grow. The only thing that could be gained by using 30 or 40 per cent starter, which I have often used, is to hasten the ripening of the cream, ripen it in three hours because I wanted to keep other bacteria from getting into the fat. That was the object in that case, but for every-day work I do not think the buttermakers will find it practical to carry along pretty near as much starter in his creamery as he has cream. I think he would find it too burdensome and it is not necessary in a good milk plant to do that. Eighteen thousand pounds of milk, as was suggested by Mr. Miller, would not need over a twenty-gallon can of starter to ripen that cream properly. Of course I was speaking to the buttermaker that has not got his head in the game. If he has his head in the game he will not only have it on the starter, but will have it on the quality of the cream he is getting. His head will be in the game and he will see that he gets good cream. When you get cream that has gone beyond that stage, I do not think there is a creamery in Iowa large enough to hold starter enough to make it good again.

THE PRESIDENT: Professor Van Pelt, of Ames, will now address you.

CARE, FEED AND MANAGEMENT OF THE DAIRY HERD.

PROF. HUGH G. VAN PELT, SUPT. DAIRY FARM, IOWA STATE COLLEGE, AMES.

In the not distant past the subject, "Care, Feed and Management of the Dairy Herd," would have been interesting to only a few. Land was cheap, farms large and in their virgin state of fertility. Agricultural operations were performed on an extravagant, if not a wasteful basis, and yet returned the farmer a large margin of profit. Grain farming predominated, with a few extensive feeders in each community buying and utilizing the grain for feeding purposes. All operations were conducted on an extensive basis. Steer feeding fit into the proposition admirably because grazing land and feed were cheap and plentiful. The labor required for the care, feed and management of a dozen dairy cows was sufficient to care for a hundred fattening cattle.

These conditions still exist over a large portion of Iowa, but history is repeating itself and even now the importance of dairy questions is evident to the Iowa farmer. The price of land has increased greatly in the past few years, rents are high, and as a result, profits are less certain. To meet with these changing conditions diversified and intensive farming must ensue. Large farms are being divided into smaller ones; every foot of ground must be utilized, causing more labor to be expended on a smaller acreage. What was heretofore waste must now measure the profits. Here the dairy cow fits in with the same grace that the steer did in the more extensive operations. She returns a regular income to her owner and is the most economical producer of food for man.

Iowa has for some time ranked at the top as a b utter producing state, but much of this butter his been produced at a small margin of profit and much of it at a loss. One reason for this is due to the class of cows that have been milked, but a much greater reason is that their care, feed and management has been at fault. It is an easy matter at the present time by the use of the Babcock test and scales to determine whether a cow is a source of profit or loss to her owner; but it is a large question in my mind whether the cow or her owner is at fault; whether it is the cow's lack of capacity and ability or her lack of opportunity that causes her to be a losing proposition. In 50 per cent of the cases I dare say it is her lack of opportunity.

Coming to realize the important place the dairy cow has to fill on the Iowa dairy farm, and that her production is in direct proportion to the opportunity afforded her, the importance of the subject, "Care, Feed and Management of the Dairy Cow," is quite evident.

The first necessity coming under the head of care is a clean, warm, well lighted and well ventilated barn. It should be clean because pure, wholesome milk *cannot* be produced in a dirty barn. In fact, cleanliness must be recognized as one of the first essentials in milk production. The temperature of the barn should be kept at from 40 degrees to 60 degrees Fahrenheit, for the dairy cow cannot withstand the effect of cold and inclement weather and at the same time be an economical producer of milk and butter. The fattening animal converts much of its food into fat and thus covering its body can withstand cold weather without difficulty and thrives well under mild exposure. If compelled to, the milk cow will do the same, but her purpose is not to produce beef. If kept in a warm, dry barn she will convert most of her food into milk and butter, retaining only enough to supply the needs of her body. Faithful and deserving of sympathy is the cow that converts a great portion of her food into milk for her master and is then compelled to seek shelter behind a straw stack for protection from the cold, stormy blasts of winter. Experiments performed along this line at the Indiana station show that three cows kept in a warm barn at night and turned out in a lot in the day time produced in 48 days 161 pounds less milk than a like number of cows kept under the same conditions except that they remained out only an hour each day. The better sheltered cows ate much less feed and gained 231 pounds, while the exposed cows lost 33 pounds in live weight.

Calling to mind the fact that these exposed cows were sheltered from the winds by an open shed in day time and had a comfortable barn at night, it is easy to conceive one reason why many cows are not economical producers. Thorough ventilation and an abundance of light in the cow barn are quite as essential, owing to the fact that the dairy cow is confined such a large portion of the year. In a dark, stuffy barn, germs multiply in great rapidity, the cow becomes lacking in vigor, and, even though disease does not result, her opportunities, to produce largely and economically, are handicapped. Seldom do we find a beast whose nervous system is so highly organized as that of the dairy cow, and invariably the greatest producing cows are those whose nervous systems are most highly organized. Owing to this fact she responds readily to kindness, regularity in feeding, watering and milking. Never can great yields be expected from cows that are cared for by noisy, rough and irregular attendants. Grooming does much to quiet the cow and gain her confidence, and experiments that have been conducted show that from 2½ to 8 per cent may be gained in milk and fat production by regular grooming.

An all important factor to be considered in caring for the dairy cow is the process of milking. Upon the regularity, gentleness and stick-to-itiveness of the milker greatly depends the quantity and quality of the milk given and the persistency of the cow's work. On one occasion, after failing in every other method to impress upon a milker the importance of extracting every possible drop of milk from the cow's udder at each milking, I induced him to milk the first few strips of one cow's milk in one sample bottle and the last few strips in another, and test them with the Babcock test. The result was the fore milk tested 2 per cent and the strippings 15.2 per cent. After that he could always be found working his hardest after the point where he had been accustomed to think he had finished milking. Another result followed closely: He found his cows were milking much more evenly and keeping up their milk flow much more persistently. During the St. Louis cow demonstration, the milkers of the winning herd were induced to milk each cow perfectly dry, and then manipulate and rub the udder vigorously, but gently, for a few minutes before leaving her. This method had much to do with the fact that at the end of a six months' milking period the cows invariably were producing more butter per day than at any other time since freshening. With such care bestowed upon her, the dairy cow is surrounded by environment conducive to making the most of the feed given her. She is then, and not till then, in a condition to make profitable use of her food.

Proper care and feeding go hand in hand, and it matters little how efficiently one is supplied, if the other is lacking, in a large degree, the results will be discouraging. To properly feed the dairy herd requires continued study on the part of the feeder.

Like human beings, cows differ one from another widely; in other words, each cow has her individuality. The food which one cow eats with avidity, another cow dislikes and eats with reluctance. The ration that is perfectly balanced for one member of the herd, and by the use of which she produces greatly and economically, is entirely out of proportion for another and she produces far below her ability in amount of milk, butter fat, and profit.

Furthermore, the ration that is balanced properly for a cow at one period of lactation does not contain the feeding nutrients in proper ratio for another period of lactation. There is a wide difference in the capacity of cows to consume food, and even a wider difference in the ability to convert food into milk. Upon the feeder rests the burden of determining and supplying the amount and proportion of the different feeding nutrients necessary for each member of the herd in order that she can at all times produce the greatest amount of milk and butter fat from the least amount of food without injury to her future usefulness.

To accomplish these results is no little task, so that on farms where the herd is large enough,—containing fifty cows or more,—one man should have entire charge of the feeding. If he is endowed with the qualifications of an expert feeder he can easily stimulate the herd to return handsome profits after deducting his own salary. He should be a man who is capable of studying and learning the peculiarities of each animal in the herd.

He should know that foods rich in protein and ash are conducive to the proper development of bone and muscle in the younger members of the herds, and stimulating to the milking proclivities of the cows in milk. He should know that foods, like corn, that are rich in carbohydrates are largely heat and fat producers, and tend toward fattening an animal rather than growing their muscle and bone and stimulating milk production. Summing up, he should know the character of the ration demanded by each beast in the herd and be able to balance up the ration accordingly. If this is done properly, all the animals will be growing or producing to the limit of their capacity.

The feeder is an artist who can take a calf and grow it into a cow that is capable of producing 400 pounds or more of butter in a year, yet he should be able to do this with 90 per cent of the female calves in his care, in face of the fact that the average butter produced by the milch cows of Iowa is a meager 150 pounds. To accomplish this result, his efforts must be untiring from the day the calf is born. After the calf has received the colostrum from the cow for the first two or three days of its life, or until the inflammation is out of the dam's udder, and after the point is past where milk fever is liable to occur, the youngster should be taken away and taught to drink about ten pounds of new milk a day for two weeks. Skim milk should then be gradually substituted for a proportion of the new milk until at the end of a month the calf is drinking about twelve pounds of skim milk. It is not advisable to feed a larger quantity up to this time, and never should a calf receive more than twenty pounds of milk in one day, else indigestion and scours will result, giving the calf a set back in its growth. A tablespoonful of blood flour given regularly in each feed of milk will positively eliminate all danger from calf scours, where a reasonable amount of milk is fed.

When two weeks old, the calf begins to want for food of a more solid nature, at which time a mixture of one-third each of corn, oats and bran should be given it, together with a bunch of good clover hay. If blood flour is fed in the milk, there will be a sufficient amount of protein and ash in the ration to warrant lively growth of bone and muscle. Otherwise, one-fourth of the grain ration should be composed of oil meal to insure proper development. The calf should never suffer from hunger. The fact that a dairy calf should never become fat has led many to think that it should be half starved. Neither the half starved poor weakling nor the plump fat youngster will ever become a profitable dairy cow. By feeding all the feed of the right character that the calf will readily clean up from its feed-box, a happy medium will be struck that will insure the most excellent dairy cows. Access to a grass lot is essential in the summer time, but every day for the first year the calf should have a feed of corn, bran and oats suitable to its needs. As a yearling, the heifer is little trouble; the only care necessary being to see that she receives sufficient food rich in bone and muscle producing elements to insure unchecked growth until maturity is reached. Two weeks prior to the first freshening period, which should come when the heifer is about two years old, she should be placed in a roomy, quiet, well-bedded box stall at nights, where all is quiet. Here she should be fed warm bran mashes containing a handful of oil meal and when calving time, the most critical period of her life comes, all conditions will be harmonious and no trouble is liable to ensue. The same care should continue for two weeks, during which time her calf has been taken from her, she has become quiet, gained regularly in her milk flow, and is ready to go on feed. The feeder must now determine what character her ration shall be. If fat, as is usually the case, the ration must be quite narrow in order to stimulate the milk producing proclivities in order that she will transfer this fat from her body to the milk pail. Upon the manner in which the cow is fed and handled the first thirty days after freshening, greatly depends the volume of her work for that period of lactation. During this time the feeder, taking advantage of the maternal instincts of the cow, can easily stimulate her to the limit of her ability. This is a very important point for the feeder to bear in mind, for it is a difficult task to greatly increase the milk flow after this time until another period of lactation begins.

Close watchfulness is now necessary, so that if the heifer shows signs of working too hard by becoming poor, the ration must be widened, or she will become too weak and emaciated to do her best work. By thus changing the width of the ration back and forth, always supplying a wide variety and abundance of feed, the heifer can be kept in the best of working condition. If at the same time she is cared for properly and milked regularly with persistence she will most invariably produce profitably, even the first year, if her breeding is along dairy lines. She should be re-bred so she will milk persistently for a year and then have time to rest for six weeks before she freshens again. Profiting by her first year's education, she should, and no doubt will, be a great and profitable producing cow the remainder of her life, if good feed and care continue.

Although the point of management has been left till last, it is perhaps the most important point in successful dairying. Good management makes proper care and feed possible. Upon the management depends the supplying of good feed, pastures, soiling crops, etc., that go to make the conditions of the cows and their attendants favorable. A good manager is one who knows how to do every item of labor that is to be done about the herd, from cleaning the stable to keeping the accounts, testing the milk, etc. He is one who is willing to do any one of these bits of labor, for on most dairy farms occasion often demands that the manager do his share of the work. In smaller herds, the manager should take upon his shoulders the work of the feeder, dispose of the milk products, attend to the breeding, keep the records, and attend to the hundred of details that would be overlooked by a man in a less responsible position. In fact, he is a busy man from morning till night.

MEMBER: I would like to ask if you find many dairymen feeding this blood flour to calves?

PROF. VAN PELT: Yes, a great number, especially in the East.

MEMBER: I have been feeding blood meal to milk cows. Is there any benefit derived from that?

PROF. VAN PELT: Possibly if you could get cows to eat it. I have never been able to get cows to eat blood meal. It has an odor which does not seem to be objectionable to the calf because it is mixed with the milk. I prefer blood flour.

MR. WENTWORTH: I would like to ask Prof. Van Pelt if he applies that rule on feeding to the calf that is typically dairy or to the calves that we are producing on our farms that have a strong infusion of beef blood? That is the keeping of the calf poor or in a reasonable growing condition.

PROF. VAN PELT: My idea in bringing out that point was this. I found in going over different states and being connected with different dairy herds that the impression that the calf should never be allowed to become fat has led many to believe that they should not feed the calf any great amount for fear it would become fat. The idea in feeding any young animal is to grow it. Once we get a framework it is no trouble to put on fat. Corn will do that, anything that contains carbohydrates will put fat on an animal body. I advise this in raising a beef calf or a dairy calf, more especially however, the dairy calf, but I consider it an important point to stimulate bone and muscle growth in the youngster, whether it is pig, calf, colt, and then from week to week you can shape the animal up to suit yourself.

MR. WENTWORTH: The tendency of the average grower of calves or pigs is not to get them too fat, in fact the tendency is entirely the other way. They are stealing all the time from the younger and growing animals. There is a tendency along these lines, but it is so seldom found through the general run of practice that it is hardly worth while to emphasize it too much, and the point I want to call attention to is that there are more calves spoiled on our Iowa farms by stealing from them. That is the point I have tried to bring out. If you ask a man why he treats a calf that way he will say, "If I feed that calf too much it will be too fat and never amount to anything." My idea is to give it sufficient milk, oats and bran so as to supply the appetite of that calf so he always has plenty to eat, but at the same time is not fat, just growing nicely. When you see it one week and then see it the next you will see so much gain. One fault in raising a calf is starving it; another mistake in feeding a young animal, and just as great a mistake, is giving him feeds that will fatten him. You take a young pig and as soon as you commence throwing corn to that pig when he is six months old he will not get any bigger.

A calf will do the same, a colt will do the same. When the animal is young you must get in your work towards growing; it will want all the feed it can eat, but be careful to give it feed of a growing nature rather than a fattening character.

Professor, would you take the calf away from the young heifer the same as with the mature cow?

PROF. VAN PELT: Yes, I think as a matter of fact it is probably more essential at this time than any other, because when a cow freshens her first time she has to be trained. On what you do the first freshening period will greatly depend what you will do after that, because a cow is probably one of the greatest animals of habit, and she will stick the rest of her life to the habits formed when young. If you let the calf run with her the first period of lactation she will fret for it.

MR. WENTWORTH: I thought the young cow's maternal instinct was more fully developed and that it was well to let the calf stay with her a couple of weeks. I believe in adhering just a little to that motherly instinct and I believe that helps to improve the milking instinct. I let the calf stay with the cow the first two weeks. The first offspring is just a little nearer to the old cow than anything else.

PROF. VAN PELT: You are perfectly right in that respect, but at the same time, in allowing a calf to stay there the first two weeks you are doing a thing that is good in one direction, but probably losing some effect you might gain. The course that I have found to be a good thing was to keep the calf in sight of the cow so she sees it and knows it is there the same as though she was with her. One of the most important factors, I consider, is the first thirty days in getting the cow where you want her. When the thirty days have passed if you have not got the cow up to her limit of production it is hard to get her there, and if you allow the calf to work on the cow two weeks you have only two weeks to get in your work. I think that the hardest work a man should put in is the first thirty days. If you get a cow to forty pounds in the first thirty days it is not hard to get down to thirty-five pounds, but if you get her up to fifty pounds she has three times as far to go down you see.

Another thing, it is hard to feed a cow the first thirty days because she is in a weakened condition. A man has to be very careful in feeding her. There is a certain limit a man comes to in the capacity of a cow. By that I mean the amount of feed she is capable of consuming. There is another line, as I think of it, that is the line of ability, that is the amount of milk a cow is capable of producing at certain times. Take a cow and increase her feed gradually thirty days, then increase it a half pound every other day; do not increase heavier than that; increase this feed and if you find that cow giving a little more milk, paying you for the consumed feed, keep increasing that feed gradually, and she goes up gradually, you are caring for her nicely, and she keeps going up until she stops. You give her more feed, she eats it but does not go any higher in her milk flow, then she is at the limit of her ability, and if you give her more feed you waste this feed and worse, because it is going through the cow and taxing her digestive system and causing her to work on that feed.

The first thirty days a man has plenty of time to know what the cow is doing. If a calf takes the milk the first two weeks you can feed her that way, but don't know whether she is paying for her feed or not.

THE PRESIDENT: Gentlemen, Professor Holden is with us and has consented to give us a ten minutes' talk on the extension work at the college.

PROF. MCKAY: Mr. Chairman, I believe Professor Holden is absent at present from the room. In regard to the extension work I might make a few remarks.

Our part, as I stated last night, is to try and help the farmers or dairymen of this State to improve their herds and, judging from the talk we have had here from the different speakers, it is quite necessary for the farmers that somebody at least should do some work along that line. We have with us here Mr. Guthrie, a graduate of our school, a man that has spent some time with some of the best feeders and best dairymen in this country, both in the State of Illinois, this State and the State of Wisconsin. His work will be to go among the farmers and induce them to keep a record of their cows, weigh and sample their milk and send the samples to some central point where they can be tested, probably at the college. It is impossible for Mr. Guthrie to cover this entire State, but it is possible to make a beginning, and if he can make a beginning and show a man by demonstrations that the work is profitable and desirable, I believe in the near future that we will have a number of men in the field and I believe that we will increase our production per cow from 140 pounds to at least 200 pounds within the next two or three years. We should average that; dairymen should aim to get at least 300 pounds of butter as a standard. Thank you.

THE PRESIDENT: We will now listen to the reading of the resolutions, by Mr. Neitert, chairman of that committee.

REPORT OF COMMITTEE ON RESOLUTIONS.

WHEREAS, The thirtieth annual convention of the Iowa State Dairy Association has been one of the most successful meetings held in the history of the association, we desire to extend our most heartfelt thanks to those who so liberally contributed to make this a most beneficial and enjoyable meeting.

We especially desire to express our thanks to the ladies of Cedar Rapids who so kindly favored us with many choice selections of vocal and instrumental music, this being a special and pleasing feature of the convention.

We also desire to express our appreciation of the long trip taken by Mr. Jules Lombard to sing before the convention. His songs have charmed our members for the past thirty years, and it is our earnest desire that he may continue to meet with us for many years to come.

We wish to express our thanks to the press and citizens of Cedar Rapids for their liberal support and entertainment.

And it is with much regret that since Cedar Rapids was selected as the meeting place of this annual convention, death has deprived us of the presence of Hon. A. H. Connor, mayor of Cedar Rapids.

We hereby express our appreciation of the obligations to Hon. James Wilson, Secretary of Agriculture; also to the dairy bureau of this department for the efforts they are putting forth to advance the dairy interests, not only in our State, but also in all the states of the Union.

We at this time earnestly desire to express our hearty endorsement of the efficient and high class of educational work being done by the State Agricultural College at Ames, Iowa, in all its various branches, especially in the dairy department, by and through the teachings of its many able and untiring instructors.

We also heartily approve the good work being done in the interest of all the people by the State Dairy and Food Commissioner and his assistants.

WHEREAS, The dairy industry being one of the principal branches of agriculture of our State; be it

Resolved, That we most urgently solicit all the honorable members of the Legislature of the State of Iowa to materially assist the growth and needs of the dairy industry of our State in enacting sound and just laws and making suitable appropriation for the purpose of aiding in the enlargement and betterment of our great dairy interests.

We again pledge our allegiance to, and most earnestly recommend, a continued and liberal support of the National Dairy Union in its efforts to suppress fraud and protect honest dairy products.

We desire to express our many thanks to our old friend and neighbor, Mr. P. H. Keiffer, for his valuable and impartial services in scoring the butter exhibit at this convention.

We also desire to express our thanks and appreciation to Messrs. Gude Bros. of New York City for their kindness and liberality in paying the expenses of and furnishing the time of Mr. P. H. Keiffer while attending this convention.

Dated at Cedar Rapids, Iowa, this 9th day of November, 1906.

H. J. NIETERT,
FRED LEIGHTON,
J. J. BRUNNER,
Committee.

On motion, duly seconded, the resolutions were adopted as read.

MR. NEITERT: Would anyone like to offer any further resolutions?

MR. WENTWORTH: As an apology for getting up here, I have been asked to call the attention of this convention to a little oversight. We have been feasting on such good things that we have forgotten the misfortune of others.

I move before we adjourn, sir, that the president and secretary be instructed to send a telegram of sympathy to our old friend and president, Mr. W. K. Boardman, who would be with us in person were his health such that he could, but who will always be with us in spirit on all occasions.

Motion seconded, and unanimously adopted.

MR. NEITERT: I do not want to heap bouquets on anyone, I have no special favors to ask of anyone, but I believe it is a proper time now for us, as members of this association, in lieu of the services that have been given us by our honorable president, that is about to retire, for the past four years, for his untiring efforts and the great success he has made of the association during that time by his work, I desire and make a motion that this convention express their feelings by a vote of thanks to Mr. S. B. Shilling for his good work and efforts in behalf of this association for the last four years.

Motion seconded and carried unanimously by rising vote.

MR. SHILLING: I thank you, ladies and gentlemen, more than I can express for this hearty endorsement of what I have tried to do for you and my only regret is that I have not been able to do more. The only thing I want to say to you now is that because I am a "has-been" and out of this, I don't want you to think I am out of the dairy game in the State of Iowa, and I want you buttermakers to feel as free to call on me in the future as you have in the past, and I promise you I will do everything I can. Gentlemen, I thank you.

THE CHAIRMAN: The butter will be sold at the hall this afternoon at 1:30.

Is there any other business to come before the meeting? If not we will stand adjourned.

South Entrance Agriculture-Horticulture-Dairy Building.

IOWA STATE FAIR, 1906.

PART VIII

EXTRACTS FROM
STATE DAIRY COMMISSIONER'S
REPORT OF 1906.

TWENTIETH ANNUAL

H. R. WRIGHT, Commissioner

The condition of the dairy interest in this State has never been better than it is at present, and the prospects for further improvement and increases are very bright. The disturbing factors of competition with creameries of the new kind and the uncertainty of the effects of new methods of doing business seem to have become quite well understood, and there is a feeling of certainty and stability on the part of managers of both the small creameries and the larger ones. The number of creameries that have closed this year is very small. This fact is significant, when it is remembered that more than 350 creameries have been closed up in the last four years.

The same feeling of permanence of the industry is found among the producers of milk and cream in every section of the State and the outlook is good for continued increases in number of dairymen, in the size of their herds, in their per capita production, as well as for continued prosperity on the part of the manufacturer of the butter.

For a good many years the farmers of this State have almost unanimously used the Shorthorn cow in their dairy herds, and they have nothing to regret for having done so under the existing conditions. There has, however, lately been a considerable demand for dairy breeds of cattle, particularly of the larger breeds. This office has had a good many inquiries as to where grade dairy cows might be purchased in carload lots. The same kind of inquiries come in large numbers to the professors at Ames, and, of course, it is impossible for one to secure Holsteins, Jerseys, Guernseys, or other dairy cattle in large quantities in any one place in this State. A very large number of our dairymen are purchasing Holstein sires and starting dairy herds.

NEW DAIRY LAWS.

I.

Be it Enacted by the Thirty-first General Assembly of the State of Iowa:

SECTION 1. That every owner, manager or operator of a creamery shall, before delivering to any person any skim milk, cause the same to be pasteurized at a temperature of at least one hundred and eighty-five (185) degrees Fahrenheit.

SEC. 2. Whoever violates the provisions of this act shall, upon conviction, be liable to a fine of not less than twenty-five dollars nor more than one hundred dollars.

III.

Be it Enacted by the Thirty-first General Assembly of the State of Iowa:

SECTION 1. It shall be unlawful for the owner, manager, agent or employe of a cheese factory, creamery or condensed milk factory to falsely manipulate or under-read or over-read the Babcock test or any other contrivance used for determining the quality of milk or cream, or to make any false determination of the said Babcock test or otherwise.

SEC. 2. Whosoever shall violate any of the provisions of this act shall, upon conviction thereof, be fined not less than twenty-five dollars nor more than one hundred dollars.

III.

Be it Enacted by the Thirty-first General Assembly of the State of Iowa:

SECTION 1. The State Food and Dairy Commissioner and his deputy and assistants shall have full access to all places of business, factories, buildings, wagons and cars used in the manufacture, sale or transportation within the State of any dairy products or any imitation thereof.

SEC. 2. They may examine and open any package, can or vessel containing, or believed to contain, any article or product which may be manufactured, sold or exposed for sale in violation of the laws of this State relative to the dairy products and imitation thereof, and may inspect the contents therein and take therefrom samples for testing or analysis.

SEC. 3. Whosoever shall refuse to allow the inspection herein provided for or shall in any way hinder or obstruct the proper officers performing their duties hereunder shall be punished by a fine not exceeding one hundred (100) dollars or by imprisonment in the county jail not exceeding thirty (30) days.

Purchase or Sale of Unwholesome Milk or Cream.

From Chapter 10, Title 24, Code.

SECTION 4989. Sale of impure or skimmed milk—skimmed milk cheese—labeling—purchase of unwholesome milk or cream.—If any person shall sell, exchange, or expose for sale or exchange or deliver or bring to another, for domestic or potable use, or to be converted into any product of human food, any unclean, impure, unhealthy, adulterated, unwholesome or skimmed milk or milk from which has been held back what is commonly known as strippings, or milk taken from an animal having disease, sickness, ulcers, abscess or running sore, or which has been taken from the animal within fifteen days before or five days after parturition; *or if any person shall purchase, to be converted into any product of human food, any unclean, unhealthful, adulterated or unwholesome milk or cream, or shall manufacture any such milk or cream into any product of human food, * * * he shall be fined not less than twenty-five nor more than one hundred dollars, and be liable for double damages to the person or persons upon whom such frauds shall be committed. * * **

This section of the Iowa dairy law has been changed by the introduction of the words italicized and the effect is to make the buyer of bad cream equally responsible with the seller of it, to provide a penalty for the purchase to be made into product of human food of any unclean, unwholesome, unhealthy or adulterated cream or milk. Since the advent of the central creamery competition among the creameries has been very sharp and while every creamery operator desires to have the best of the product, yet the necessity of getting volume of business has tempted not a few to receive and pay for cream from which no product of human food ought ever to be made. As previously pointed out, this bad practice was a practical inducement to the producer to bring to the market cream that was bad or worse. The former law provided a penalty for the seller of bad cream or milk, but the law was scarcely ever enforced for the reason that the buyer of it was the real guilty person. A few prosecutions have been made under this amended law and fines have been inflicted, both upon purchasers and sellers of both unwholesome milk and cream, but the experience of last summer has led to the belief that the quality of milk and cream delivered to the creameries and shipping agents in this State will not attain that high quality that it ought to have until a much more complete inspection can be made of it than is now made with the small force at the command of this office.

The hand separator has thoroughly proved its usefulness in this State, but it came into use accompanied by theories inimical to good dairying. The salesmen claimed too much for the machine. Too often the producer was assured that washing once a week was all that was necessary, and that cream delivered once a week was plenty good enough. These theories are absurd, of course, but they have been followed by enough people so that hand separator butter is at a discount everywhere, and too many commission men have an idea that it is an impossibility to make the highest class of butter out of cream separated at the farm. The fact that poor qualities of cream make poor grades of butter and lose money for the manufacturer, and especially for the producer, that the reputation of the State suffers by reason of second-class products, has not seemed to impress either the producer or the manufacturer. So the statute was amended and prosecutions followed. It remains to be seen whether this practice will result in much good.

The law is more or less unpopular. It is difficult to secure conviction unless the case is an extreme one. Hence it will be impossible to eliminate by prosecutions any but the extreme cases of sale or purchase of unclean milk or cream. There will still be plenty of milk and cream sold that will not come up to the highest standard and yet will not be such as is condemned by the statute.

In the report of a year ago this department urged the grading of cream for butter-making purposes, the purchase of it on grade and the payment therefor in strict proportion to its real value. Early last spring the centralizers agreed on a basis for grading cream and payment for the same substantially as follows:

No. 1 grade consists of hand separator cream delivered at least twice a week in cold weather and three times a week in warm weather, free from all bad flavors and testing not less than 30 per cent.

No. 2 grade consists of hand separator cream testing less than 30 per cent and delivered less frequently than required for first grade.

Gravity and water separator cream not desired at all.

This basis of frequency of delivery and percentage of test is not the proper basis for grading of cream for quality but was a practical working basis for the creamery buying through agents and shipping to the central plant by rail. The proper basis for grading is, of course, the quality, the cleanliness and general state of excellence of the product, yet for butter-making purposes a high-testing cream is of more value than the same amount of fat in lower testing cream, and the man who delivers his cream every other day is a good deal more likely to take good care of it than he is if he may bring it once a week or less often. Hence this attempt has resulted in bettering the grade of cream received at central plants. But the competition was too strenuous for some of them and they have gone back to that system of paying a uniform price for any and all kinds of cream, a system that practically pays a premium on poor cream, and pays the man who produces good cream less than it is worth, the system that resulted in the present undesirable conditions and which will still further accentuate them. If the creamery operators could actually pay for cream upon its real value and continue to do so for a year, they would have solved the problem of how to get better raw material. But, of course, the experience of the last few years convinces that they will not practice real grading of cream in any large number of cases so long as present conditions exist.

AVERAGE WAGES OF BUTTERMAKERS.

Reports of monthly wages paid 640 buttermakers of the State show an average salary of $69 per month. Nearly all of our creameries are operated the full twelve months and the average annual wages of the buttermakers is somewhere from $800 to $850, an increase of about $75 to $90 a year over the increase shown in the last annual report, and an increase of $225 annual average wages over the wages paid five years ago. The increased size of the creameries, the greater value of their product, as well as the greater demands for ability and skill on the part of the buttermaker, have brought about this increase in wages paid. While $69 is the average wages, $100 a month is a common figure for first-class buttermakers in first-class creameries, and the State has lost several buttermakers at much higher salaries. The facts indicate that the buttermaker of skill and experience and good record is easily able to demand wages much in excess of the average.

PASTEURIZATION OF SKIMMED MILK.

The following law was enacted by the Thirty-first General Assembly, and became effective July 4, 1906:

I.

Be it Enacted by the Thirty-first General Assembly of the State of Iowa:

SECTION 1. That every owner, manager or operator of a creamery shall before delivering to any person any skimmed milk cause the same to be pasteurized at a temperature of at least one hundred and eighty-five (185) degrees Fahrenheit.

SEC. 2. Whoever violates the provisions of this act shall, upon conviction, be liable to a fine of not less than twenty-five dollars nor more than one hundred dollars.

Under this law the managers or operators of five creameries have paid fines of $25 and costs each for violating same. This department did not attempt to inflict fines upon creamery operators who were merely dilatory about arranging to pasteurize skimmed milk until about the 1st of September. The notifications sent out were in a few cases absolutely ignored, apparently on the theory that the forced, hence prosecutions were absolutely necessary to make it appear that the law was intended for the proper purposes and that the department was expected to enforce it. The Commissioner very much regrets this necessity.

The necessity for legislation for the suppression of tuberculosis in farm animals has been apparent for several years to a large number of interested persons. One of the most frequent allegations was that the skimmed milk from the creamery was the cause of increased tuberculosis in hogs. For a number of years packers whose hogs are killed under the eye of a competent Government inspector have found their losses by reason of tuberculosis hogs increasing in proportion. They uniformly assert at the present time that their regular loss by reason of tubercular hogs, for which they have paid full price, runs from one to two per cent; that from dairy localities the percentage is higher than elsewhere; that skimmed milk and buttermilk fed hogs show the highest percentages of tuberculosis. Of course the farmer receives nothing less for his hogs to cover this loss to the packer, but even so small a percentage as two per cent is a very great item figured on the aggregate value of Iowa hogs, and the fact that the disease increases among hogs is alarming. Dairymen should be interested in movements for suppression of animal diseases. Their product depends largely upon its reputation for wholesomeness, and we can not afford to omit any act which tends to keep up the general reputation of our product. For this reason passage of the law requiring pasteurizing of skimmed milk was secured from the Legislature.

Most Iowa hogs are marketed before they are a year old. Tuberculosis in hogs does not show its effects so far as the general appearance of the live animal is concerned. It can only be detected by the tuberculin test, or by inspection after slaughter. Because the discovery of this disease in the live animal is almost impossible, farmers are inclined to doubt the prevalence of the disease, but a visit to one of the Iowa packing houses will show too large a number of slaughtered animals hung up in the room for tuberculous hogs. Farmers of this State now lose more than a million dollars annually by reason of this disease in swine. It has been proven experimentally over and over again that hogs fed on milk from tuberculous cows readily contract the disease. It follows, then, that the distribution of skimmed milk at a creamery results in the spreading of the infection to every farm which patronizes the creamery, and other means of checking tuberculosis in hogs must be found when the hogs are fed upon the infected milk from the neighborhood creamery.

The Dairy Commsisioner's report of a year ago showed that more than half the milk creameries of the State were voluntarily pasteurizing their skimmed milk before returning to the patron, yet the passage of the present law and attempt at enforcement raised very great opposition. Various objections were raised to the practice. The creameries pasteurizing skimmed milk complained that it made the milk stringy and ropy; that pasteurized skimmed milk sours quicker than unpasteurized; that it makes the calves sick; that the heating destroys the feeding value, and lastly, that it is absurd to care for the health of hogs when no effort is made to prevent the spread of tuberculosis by the use of the butter made from tuberculous milk. None of these objections are well founded. If heating skimmed milk makes it stringy and ropy it is because the milk was nearly or quite sour before being pasteurized, a condition in which it ought not to come to the creamery. The heated milk does not sour quicker than the unheated. More than half the creameries of the State practice the heating of skimmed milk for the very purpose of lengthening the time that it would keep sweet. If heating milk makes calves sick, it is fed to them hot and they are scalded. The heating of skimmed milk does not lower the feeding value of the milk whatever. Lastly, the germs of tuberculosis do not thrive in butter, and are seldom found even in the fresh butter immediately from the churn.

The law requiring the pasteurization of skimmed milk is a proper law, and while it does not, by any means cover the whole of a difficult problem, it is a considerable step in the right direction, and the creameries of this State should render cheerful obedience to the same The Dairy Commissioner is required to enforce this statute, and expects to do so.

TABLE No. 1.

Showing average monthly price of fancy Western Creamery Butter in New York Market.

Month	Twelve months ending Nov. 1, 1897	Twelve months ending Nov. 1, 1898	Twelve months ending Nov. 1, 1899	Twelve months ending Nov. 1, 1900	Twelve months ending Nov. 1, 1901	Twelve months ending Nov. 1, 1902	Twelve months ending Nov. 1, 1903	Twelve months ending Nov. 1, 1904	Twelve months ending Nov. 1, 1905	Twelve months ending Nov. 1, 1906
November	$ .2112	$ .2325	$ .2337	$ .2600	$ .2487	$ .2412	$ .2650	$ .2317	$ .2481	$ .2350
December	.2250	.2290	.2160	.2720	.2540	.2510	.2920	.2423	.2688	.2480
January	.1900	.2040	.1975	.2650	.2262	.2425	.2762	.2270	.2910	.2650
February	.2050	.2042	.2100	.2500	.2250	.2862	.2600	.2517	.3218	.2709
March	.1900	.1937	.2075	.2550	.2212	.2840	.2860	.2452	.2807	.2700
April	.1880	.1980	.1962	.1960	.2099	.2825	.2725	.2284	.3008	.2188
May	.1530	.1580	.1790	.2012	.1900	.2275	.2200	.2012	.2371	.2017
June	.1500	.1687	.1881	.1950	.1925	.2195	.2160	.1803	.2049	.2022
July	.1500	.1687	.1835	.1960	.1960	.2131	.2012	.1767	.2056	.2062
August	.1675	.1860	.2000	.2100	.2050	.1990	.1940	.1793	.2111	.2257
September	.1930	.2025	.2262	.2150	.2110	.2170	.2075	.1947	.2068	.2462
October	.2290	.2235	.2400	.2190	.2200	.2362	.2100	.2095	.2184	.2611
Average val. per lb. for each year	$ .1885	$ .1971	$ .2065	$ .2278	$ .2165	$ .2416	$ .2417	$ .2140	$ .2487	$ .2375

RAILROAD BUTTER SHIPMENTS.

The following table shows the number of pounds of butter, net, shipped from each county in the State to points outside the State, which is found by subtracting sixteen per cent of the gross weight as reported by the railroads of the State. This department is under obligations to the freight officials of the different railroads for furnishing us these figures.

Table showing net pounds of butter shipped out of the state, as reported by the railroads, for the year ending September 30, 1906.

Counties	1905	1906	Increase	Decrease
Adair	1,331,358	1,079,890		251,468
Adams	34,234	85,444	51,210	
Allamakee	1,293,597	1,468,626	175,029	
Appanoose	357	32,797	32,440	
Audubon	1,327,357	1,186,008		141,349
Benton	457,983	793,839	335,856	
Black Hawk	1,338,071	1,480,132	142,061	
Boone	49,078	53,466	4,388	
Bremer	2,795,237	2,473,678		321,559
Buchanan	1,823,524	3,098,132	1,274,608	
Buena Vista	1,006,203	1,321,824	315,621	
Butler	1,954,725	2,233,228	278,503	
Calhoun	1,070,783	1,531,484	460,701	
Carroll	1,926,932	2,020,441	93,509	
Cass	201,247	286,452	85,205	
Cedar	264,171	290,940	26,769	
Cerro Gordo	1,393,355	884,721		508,634
Cherokee	270,089	612,881	342,792	
Chickasaw	2,146,074	2,468,370	322,296	
Clarke	20,756	10,967		9,789
Clay	676,754	1,218,797	542,043	
Clayton	3,149,763	2,373,250		776,513
Clinton	656,448	1,137,963	481,515	
Crawford	1,004,439	1,093,109	88,670	
Dallas	561,107	647,464	86,357	
Davis	1,024			1,024
Decatur	84,048	14,496		69,552
Delaware	2,474,109	2,740,122	266,013	
Des Moines	324,177	250,565		73,612
Dickinson	483,315	729,938	246,623	
Dubuque	2,569,853	2,271,330		298,523
Emmet	597,037	644,165	47,128	
Fayette	2,365,684	2,766,049	400,365	
Floyd	723,058	777,425	54,367	
Franklin	783,309	122,854		660,455
Fremont				
Greene	68,571	137,579	69,008	
Grundy	1,008,893	884,965		163,928
Guthrie	97,488	896,143	798,655	
Hamilton	1,470,030	1,400,683		69,347
Hancock	772,070	888,937	116,867	
Hardin	1,631,311	1,784,853	153,542	
Harrison	39,600	36,345		3,255
Henry	13,009	12,458		551
Howard	1,049,955	806,384		243,571
Humboldt	663,453	657,326		6,127
Ida	213,124	431,692	218,568	
Iowa	494,717	653,054	158,337	
Jackson	1,543,515	1,594,125	50,610	

RAILROAD BUTTER SHIPMENTS—CONTINUED.

Counties	1905	1906	Increase	Decrease
Jasper	131,523	87,169	----------	44,354
Jefferson	155,454	146,734	----------	8,720
Johnson	37,044	43,250	6,206	----------
Jones	2,286,316	3,752,833	1,466,517	----------
Keokuk	103,278	194,030	90,752	----------
Kossuth	1,929,405	2,423,053	493,648	----------
Lee	2,404,326	3,993,365	1,589,039	----------
Linn	1,695,892	1,734,959	39,067	----------
Louisa	17,163	14,009	----------	3,154
Lucas	101,323	1,016	----------	100,307
Lyon	348,060	592,720	244,660	----------
Madison	3,318	----------	----------	3,318
Mahaska	79,722	61,775	----------	17,947
Marion	212,729	165,526	----------	47,203
Marshall	465,589	387,086	----------	78,503
Mills	4,801	13,440	8,639	----------
Mitchell	1,784,298	1,582,822	----------	201,476
Monona	45,567	121,596	76,029	----------
Monroe	47,653	35,884	----------	11,769
Montgomery	37,591	----------	----------	37,591
Muscatine	32,328	39,382	7,054	----------
O'Brien	633,893	702,789	68,896	----------
Osceola	526,754	207,138	----------	319,616
Page	2,399,885	645,633	----------	1,754,252
Palo Alto	1,084,465	2,303,861	1,219,396	----------
Plymouth	460,097	968,641	508,544	----------
Pocahontas	300,666	622,391	321,725	----------
Polk	5,827,811	5,117,540	----------	710,271
Pottawattamie	541,130	284,351	----------	256,779
Poweshiek	357,812	85,262	----------	272,550
Ringgold	----------	160,625	160,625	----------
Sac	635,397	936,510	301,113	----------
Scott	235,652	367,482	131,830	----------
Shelby	443,672	574,071	130,399	----------
Sioux	1,569,576	1,762,771	193,195	----------
Story	875,894	850,053	----------	25,841
Tama	486,272	386,111	----------	100,161
Taylor	978,588	1,289,519	310,931	----------
Union	1,301,753	1,383,386	81,633	----------
Van Buren	46,099	27,626	----------	18,473
Wapello	253,105	408,224	155,119	----------
Warren	1,108	2,966	1,858	----------
Washington	36,821	41,595	4,774	----------
Wayne	933,923	996,758	62,835	----------
Webster	592,117	643,096	50,979	----------
Winnebago	969,207	1,426,005	456,798	----------
Winneshiek	1,919,209	1,957,822	38,613	----------
Woodbury	8,073,201	6,342,346	----------	1,730,855
Worth	792,345	768,180	----------	24,165
Wright	582,230	1,185,815	603,585	----------
Totals	91,007,054	98,184,607	16,544,115	9,366,562

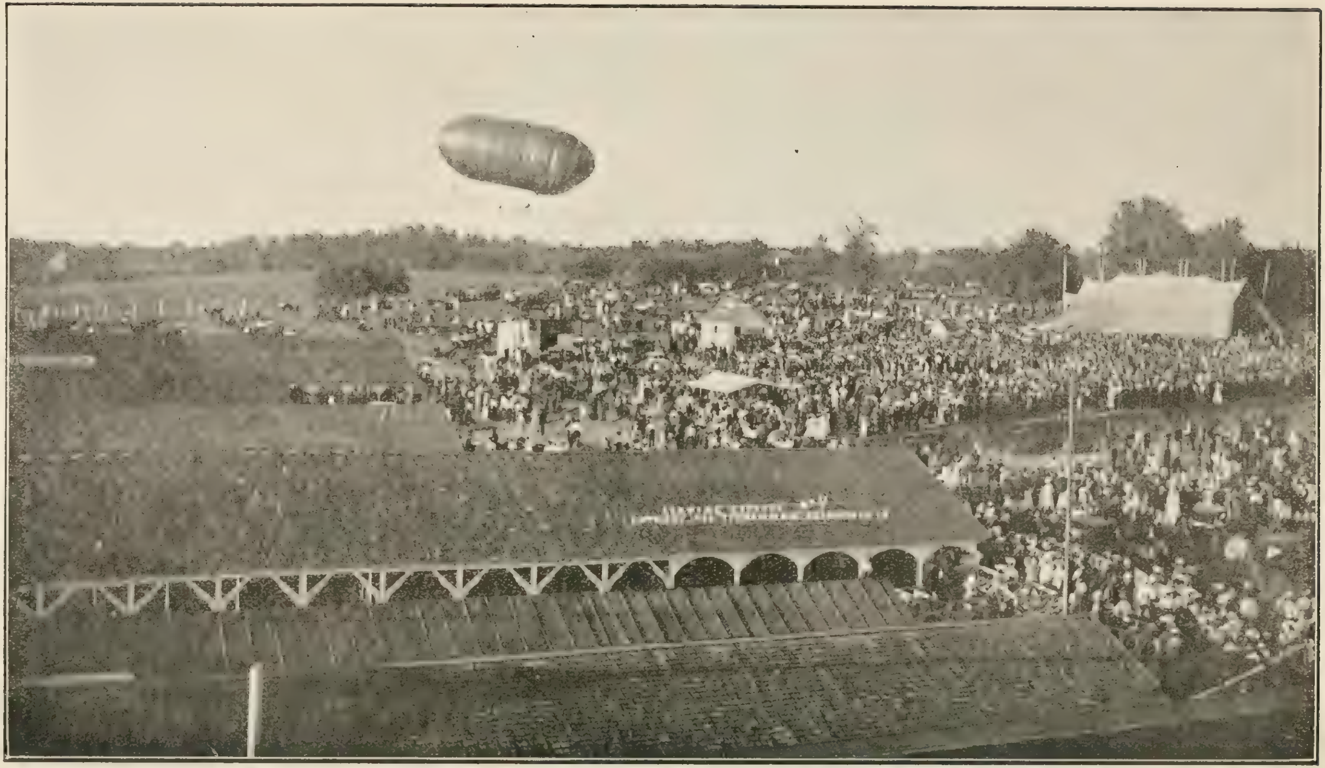
Counties shipping more than 1,000,000 pounds, net, of butter in the year ending September 30, 1906.

Counties	1905	1906
Woodbury	8,073,201	6,342,346
Polk	5,827,811	5,117,540
Lee	2,404,326	3,993,365
Jones	2,286,316	3,752,833
Buchanan	1,823,524	3,098,132
Fayette	2,365,684	2,766,049
Delaware	2,474,109	2,740,122
Bremer	2,795,237	2,473,678
Chickasaw	2,146,074	2,468,370
Kossuth	1,929,405	2,423,053
Clayton	3,149,763	2,373,250
Palo Alto	1,084,465	2,303,861
Dubuque	2,569,853	2,271,330
Butler	1,954,725	2,233,228
Carroll	1,926,932	2,020,441
Winneshiek	1,919,209	1,957,822
Hardin	1,631,311	1,784,853
Sioux	1,569,576	1,762,771
Linn	1,695,892	1,734,959
Jackson	1,543,515	1,594,125
Mitchell	1,784,298	1,582,822
Calhoun	1,070,783	1,531,484
Black Hawk	1,338,071	1,480,132
Allamakee	1,293,597	1,468,626
Winnebago	969,207	1,426,005
Hamilton	1,470,030	1,400,683
Union	1,301,753	1,383,386
Buena Vista	1,006,203	1,321,824
Taylor	978,588	1,289,519
Clay	676,754	1,218,797
Audubon	1,327,357	1,186,008
Wright	582,230	1,185,815
Clinton	656,448	1,137,963
Crawford	1,004,439	1,093,109
Adair	1,331,358	1,079,890
Totals	67,962,044	74,998,191

These thirty-five counties ship 76 per cent of the 98,184,607 net pounds of butter shipped from the state.

Table showing total net butter shipments of the State for the years 1890 to 1906, inclusive, from Iowa to points outside the State; also increase or decrease as compared with the year preceding.

Year Ending October 1st	Net pounds of butter shipped	Increase over preceding year	Decrease from preceding year
1890	71,255,796	----------	----------
1891	68,690,716	----------	2,565,080
1892	60,112,931	----------	8,577,785
1893	54,572,902	----------	5,540,029
1894	54,509,417	----------	63,485
1895	66,497,108	11,987,691	----------
1896	80,032,916	13,535,808	----------
1897	83,620,081	3,587,165	----------
1898	75,364,337	----------	6,255,744
1899	76,620,326	1,255,989	----------
1900	71,719,329	----------	4,910,997
1901	74,863,995	3,144,666	----------
1902	72,714,584	----------	2,149,411
1903	77,079,794	4,365,210	----------
1904	75,889,260	----------	1,190,534
1905	91,051,551	15,162,291	----------
1906	98,184,607	7,133,056	----------



AIRSHIP STARTING ON FLIGHT FROM STATE FAIR GROUNDS TO CITY OF DES MOINES DURING FAIR OF 1906

PART IX

OFFICIAL REPORT

OF

AWARDS IN LIVE STOCK DEPARTMENTS, SCORINGS OF BOYS IN JUDGING CONTEST

AND

Press Reports of the Iowa State Fair of 1906, together with report of awards at 1906 Mature Corn Show

AWARDS
IN LIVE STOCK DEPARTMENTS
IOWA STATE FAIR, 1906

HORSE DEPARTMENT.

Superintendent..............................C. F. Curtiss, Ames, Iowa

STANDARD BRED.

EXHIBITORS.

C. E. Alexander, Des Moines, Iowa; C. L. Baxter, Des Moines, Iowa; John W. Bruere, Tracy, Iowa; D. J. Cowden, Adair, Iowa; Fred Crawford, Des Moines, Iowa; W. H. Davis, Des Moines, Iowa; J. B. Elliott, Knoxville, Iowa; E. J. Hadley, Grinnell, Iowa; Frank Iams, Lorimor, Iowa; Tom James, Des Moines, Iowa; J. A. Mason, Carlisle, Iowa; J. A. Minteer, Van Meter, Iowa; J. W. Moorehead, Montieth, Iowa; O. J. Moores, Columbia, Missouri; C. E. Monahan, Des Moines, Iowa; L. C. Noe, Hartford, Iowa; J. R. Peak & Son, Winchester, Illinois. Ed Person, Carlisle, Iowa; August Post, Moulton, Iowa; C. C. Prouty, Des Moines, Iowa; T. J. Shaw, Mitchellville, Iowa; P. F. Smith, Montezuma, Iowa; Jas. Watt, Des Moines, Iowa.

AWARDS.

Judge....................................W. A. Dobson, Marion, Iowa

Stallion Four Years Old and Over—First, McNaught, 37375, J. R. Peak & Son; second, Hail Cloud, 23606, James Watt; third, Don A. 17754, C. E. Alexander.

Stallion Over Three and Under Four—First, Major Consul, 40342, T. J. Shaw; second, Rastus Jim, 39708, J. R. Peak & Son.

Stallion Over Two and Under Three—First, Prince I. X. L., 43530, J. A. Minteer; second, Red Frances, 39781, J. R. Peak & Son; third, Blue Peak, 39782, J. R. Peak & Son.

Stallion Over One and Under Two—Bishop White Stockings, 43519, D. J. Cowden; second, Malta Vita, J. R. Peak & Son.

Horse Foal—First, J. A. Mason; second, Brown Rex, J. A. Mason; third, Count Royal, C. L. Baxter.

Mare Over Four Years Old—First, Noretta, Vol. 17, J. R. Peak & Son; second, Peak's Baby, J. R. Peak & Son; third, Anna Rietta, Jno. W. Bruere.

Filly Over Three and Under Four Years—First, Grace Darling, J. R. Peak & Son.

Filley Over Two and Under Three Years—First, Madam Peak, Vol. 17, J. R. Peak & Son; second, Topsy Royal, Vol. 17, C. L. Baxter.

Filly Over One and Under Two Years—First, Lady Hail, Fred Crawford; second, Lindy Girl, J. R. Peak & Son.

Mare Foal—First, Lady Cloud, Fred Crawford; second Beautiful Queen, J. A. Minteer.

Get of Stallion—First, J. R. Peak & Son; second, C. C. Prouty.

Produce of Mare—First, J. R. Peak & Son; second, J. A. Minteer.

CARRIAGE OR COACH HORSES.

EXHIBITORS.

John W. Bruere, Tracy, Iowa; C. E. Monahan, Des Moines, Iowa; O. J. Mooers, Columbia, Missouri; J. R. Peak & Son, Winchester, Illinois; August Post, Moulton, Iowa; Mark Shaw, Monroe, Iowa; M. O. Trailer, Marne, Iowa.

AWARDS.

Judge....................................W. A. Dobson, Marion, Iowa

Carriage Team, Shown to Carriage or Other Vehicle—First, Milton and Haness, J. R. Peak & Son; second, Champ, M. O. Trailer.

Family Mare or Gelding, Driven to Surrey or Other Suitable Vehicle—First, J. R. Peak & Son; second, Black Bess, C. E. Monahan; third, Milton, J. R. Peak & Son.

GENTLEMEN'S DRIVING HORSES.

EXHIBITORS.

John W. Bruere, Tracy, Iowa; T. D. Doke, Bloomfield, Iowa; Albert Harlan, Stockport, Iowa; J. A. Mason, Carlisle, Iowa; C. E. Monahan, Des Moines, Iowa; O. J. Mooers, Columbia, Missouri; J. R. Peak & Son, Winchester, Illinois; August Post, Moulton, Iowa; C. C. Prouty, Des Moines, Iowa; T. J. Shaw, Mitchellville, Iowa; Mark Shaw, Monroe, Iowa; S. S. Spangler, Milan, Missouri; Mark H. Whitcomb, Gilmore City, Iowa; J. P. Wilson, Indianola, Iowa.

AWARDS.

Judge..................................W. A. Dobson, Marion, Iowa

Driving Team (Pair) to Pole—First, Peak's Baby and Lovely Lady, J. R. Peak & Son; second, Black Bess and Melrose, C. E. Monahan; third, Golden Rod and Golden Glow, C. C. Prouty.

Single Driver to Harness—First, Gem, J. R. Peak & Son; second, Anna Rietta, John W. Bruere; third, Marian, J. R. Peak & Son.

MATCHED TEAM AND APPOINTMENT CLASS.

EXHIBITORS.

Loren Dunbar, Earlham, Iowa; Albert Harlan, Stockport, Iowa; C. E. Monahan, Des Moines, Iowa; O. J. Mooers, Columbia, Missouri; J. R. Peak & Son, Winchester, Illinois; C. C. Prouty, Des Moines, Iowa; T. J. Shaw, Mitchelville, Iowa; S. S. Spangler, Milan, Hissouri; Chas. Stockdale, Des Moines, Iowa.

AWARDS.

Judge..................................W. A. Dobson, Marion, Iowa

Pair of Mares or Geldings, Any Age (15.1 Hands or Over,) Driven to Vehicle—First, Milton and Hanks, J. R. Peak & Son; second, Golden Rod and Golden Glow, C. C. Prouty.

SADDLE HORSES.

EXHIBITORS.

Thos. Bass, Mexico, Missouri; Ed Clapper, Unionville, Missouri; T. D. Doke, Bloomfield, Iowa; Harris & Richardson, Mystic, Iowa; Tom H. Jones, Lucerne, Missouri; C. E. Monahan, Des Moines, Iowa; O. J. Mooers, Columbia, Missouri; J. R. Peak & Son, Winchester, Illinois; Chas. Stockdale, Des Moines, Iowa; J. H. Tapp, Dearborn, Missouri; D. Weeks, Des Moines, Iowa; Mark H. Whitcomb, Gilmore City, Iowa.

AWARDS.

Judge.................................R. E. Jones, Webster City, Iowa

Gelding Four Years or Over—First, Jack O' Diamonds, Thos. Bass.

Gelding Three Years Old and Under—Thos. Bass, Mexico, Mo.

Stallion Four Years Old or Over—First, Reckless Squirrel, 1357, Tom H. Jones; second, McDonald, Thos. Bass; third, Harold Denmark, Ed Clapper.

Stallion Three Years Old and Under—First, Jewell McDonald, Thos. Bass; second, McLeod, Mark H. Whitcomb.

Mare Four Years Old or Over—First, Twilight, Thos. Bass; second, Ruby Rice, 2031, Tom H. Jones; third, Miss Edith C., T. D. Doke.

Mare Three Years Old and Under—First, Thos. Bass, Mexico, Mo.

Champion Stallion, Mare or Gelding—First, Jack O' Diamonds, Thos. Bass.

Stallion, Mare or Gelding, Any Age—First, Thos. Bass; second, Thos. Bass; third, McLeod, Mark H. Whitcomb.

HIGH SCHOOL HORSES.

Stallion, Mare or Gelding—First, Luie A., Thos. Bass; second, Ed Clapper.

SHETLAND PONIES.

EXHIBITORS.

Horace L. Anderson, Des Moines, Iowa; J. B. Brown, Guthrie Center; Iowa; Cassidy & Thompson, Jamaica, Iowa; John Donhowe, Story City, Iowa; W. W. Garner, Des Moines, Iowa; J. R. Peak & Son, Winchester, Illinois; W. T. Roberts, Luther, Iowa; F. C. Ruegnitz, Stratford, Iowa; Chas. H. Stone, Muscatine, Iowa.

AWARDS.

Judge.................................J. I. Gibson, Des Moines, Iowa

Stallion Three Years Old or Over—First, Peter the Great, W. W. Garner; second, Anton, John Donhowe; third, Black Bantam, John Donhowe.

Stallion Foal—First, Fox, John Donhowe; second, Tommy Britton, W. T. Roberts; third, Lucille, Cassidy & Thompson.

Mare Three Years Old or Over—First, Lady Soux, Chas. H. Stone; second, Nellie Grey, John Donhowe; third, Mattie, Cassidy & Thompson.

Mare Foal—First, Gladys, Cassidy & Thompson; second, Sprite, W. T. Roberts; third, Lucille, Cassidy & Thompson.

Shetland Pony in Harness—First, Peter the Great, W. W. Garner; second, Nellie Grey, John Donhowe; third, Mattie, 4754, Cassidy & Thompson; fourth, Charm, John Donhowe; fifth, Nellie Pope, 3914, W. T. Roberts.

Pair Shetland Ponies in Harness—First, Peter the Great and Trixy, W. W. Garner; second, Black Bantam and Dot, John Donhowe; third, Topsy and Pearl, W. T. Roberts; fourth, Billie and Dolly, Cassidy & Thompson; fifth, Charm and Beauty, John Donhowe.

Tandem Team of Shetlands—First, W. W. Garner; second, Black Bantam and Dot, John Donhowe; third, Bessie R. and Pet L., W. T. Roberts; fourth, Charm and Beauty, John Donhowe; fifth, Novelty and Ditto, Cassidy & Thompson.

Shetland Pony Under Saddle—First, Folly, Horace L. Anderson; second, Beauty, John Donhowe; third, W. W. Garner; fourth, Teddis, John Donhowe; fifth, Helen, Chas. H. Stone.

Shetland Stallion and Four of His Get—First, Cassidy & Thompson; second, John Donhowe.

ENGLISH COACH BREEDS, CLEVELAND BAY AND HACKNEY.

EXHIBITORS.

Finch Bros., Joliet and Verona, Illinois; Truman's Pioneer Stud Farm, Bushnell, Illinois.

AWARDS.

Judge....................................W. A. Dobson, Marion, Iowa

Stallion Four Years and Over—First, Wood Baronet, 9066, Truman's Pioneer Stud Farm; second, Bradney Ambition, 8754, Truman's Pioneer Stud Farm.

Stallion Over Three and Under Four—First, Blaisdon Clifton, 8743, Truman's Pioneer Stud Farm.

Mare Over Four Years Old—First, Copalder Firefly, 17887, Truman's Pioneer Stud Farm.

Filley Over Two and Under Three—First, Bushnell Duchess, 17890, Truman's Pioneer Stud Farm.

MORGAN.

EXHIBITORS.

Cassidy & Thompson, Jamaica, Iowa; P. F. Smith, Montezuma, Iowa.

AWARDS.

Judge....................................W. A. Dobson, Marion, Iowa

Stallion Three Years Old and Over—First, Morgan Panic, 5003, P. F. Smith; second, Helmet, Cassidy & Thompson.

FRENCH AND GERMAN COACH.

EXHIBITORS.

Alexander Calder, Fremont, Nebraska; Peter Frohling, Webster City, Iowa; Frank Iams, St. Paul, Nebraska; McLaughlin Bros., Columbus, Ohio.

AWARDS.

Judge....................................W. A. Dobson, Marion, Iowa

Stallion Four Years Old and Over—First, Crassville, 4055, McLaughlin Bros.; second, Casse Tete, 4101, McLaughlin Bros.; third, Lubbins Chief, (336), Frank Iams, St. Paul, Nebraska; fourth, Lubbins Captain (335), Frank Iams; fifth, Rets, 2097, Alexander Calder.

Stallion Over Three and Under Four—First, Dactyle, 4125, McLaughlin Bros.; second, Diamant, 4121, McLaughlin Bros.

CLYDESDALE.

EXHIBITORS.

J. B. Brown, Guthrie Center, Iowa; James J. Burrier, Eddyville, Iowa; Alexander Calder, Fremont, Nebraska; W. W. Garner, Des Moines, Iowa; W. O. Hixson, Marengo, Iowa; McLay Bros., Janesville, Wisconsin; James Pedley, Algona, Iowa; August Post, Moulton, Iowa; Frank P. Shekleton, Lawler, Iowa; A. G. Soderburg, Osco, Illinois; T. D. Tice, Pella, Iowa.

AWARDS.

Judge.................................Robt. Graham, Claremont, Ont.

Stallion Four Years Old and Over—First, Clan Stewart, 11658, A. G. Soderburg; second, Prince Punctual, 9644, McLay Bros.; third, Captor, 12027, W. W. Garner.

Stallion Over Three Years Old and Under Four—First, Ethelbert, 12025, A. G. Soderburg; second, Tartan, 12024, A. G. Soderburg; third, St. Columbia, 11427, McLay Bros.

Stallion Over Two and Under Three—First, Black Douglas (Vol. XXIX), A. G. Soderburg; second, Black Acme, 12855, A. G. Soderburg; third, Gold Anchor, 12564, McLay Bros.

...*Stallion Over One and Under Two*—First, Cavalier, 12561, McLay Bros.; second, Golden Prince, 12346, McLay Bros.; third, Osco Fortune, A. G. Soderburg.

Horse Foal—First, Reciprocity, T. D. Tice.

Stallion Over Three Years Old, Bred by Exhibitor—First, Prince Punctual, 9644, McLay Bros.; second, Rosemack, 10406, W. V. Hixson; third, Wayside Dunglass, 9395, August Post.

Stallion Under Three Years Old, Bred by Exhibitor—First, James Pedley; second, Golden Prince, 12346, McLay Bros.; third, Byron's Prince, 12057, A. G. Soderburg.

Mare Over Four Years Old—First, Princess Goodwin, 9849, McLay Bros.; second, Queen of the Clydes, 10934, James Pedley; third, Osco Queen, 10649, A. G. Soderberg; fourth, Wayside Cordelia, 10900, August Post; fifth, Laura Mac, 10769, Frank P. Shekleton.

Filly Over Three and Under Four—First, Lady Graceful, 1118, McLay Bros.; second, Osco Sweetness, 11117, A. G. Soderberg; third, Osco Kerney, 11209, A. G. Soderberg; fourth, Pella Girl, 11221, T. D. Tice.

Filly Over Two and Under Three—First, Point Lace, 11586, McLay Bros.; second, Osco Bloss, 12056, A. G. Soderberg; third, Thorncliffe Queen, 12456, McLay Bros.; fourth, Mandy, 12132, Alexander Calder; fifth, Nellie, 12141, Alexander Calder.

Filly Over One and Under Two—First, Palmerston's Darling, 12332, W. V. Hixson; second, Florentia, 12574, McLay Bros.; third, Maggie McKinley, 12373, Frank P. Shekleton.

Mare Foal—First, Peach Blossom, W. V. Hixson; second, McLay Bros.; third, Wayside Princess, 12538, August Post.

Mare Over Three Years Old, Bred by Exhibitor—First, Princess Goodwin, 9849, McLay Bros.; second, Queen of the Clydes, 10934, James Pedley, third, Lady Graceful, 11118, McLay Bros.; fourth, Osco Sweetness, 11117, A. G. Soderberg; fifth, Orange Blossom, 10341, Frank P. Shekleton.

Mare Under Three Years Old, Bred by Exhibitor—First, Point Lace, 11586, McLay Bros.; second, Palmerston's Darling, 12332, W. V. Hixson; third, Peach Blossom, W. V. Hixson; fourth, Osco Bloss, 12056, A. G. Soderberg.

Get of Stallion—First, A. G. Soderberg; second, W. V. Hixson.

Produce of Mare—First, McLay Bros.; second, W. V. Hixson; third, A. G. Soderberg.

Grand Display—Four animals bred by exhibitor: First, McLay Bros.; second, W. V. Hixson; third, A. G. Soderberg.

SPECIAL CHAMPIONSHIPS—(SILVER CUP.)

Offered by the American Clydesdale Association.

Best American Bred Stallion, Any Age—McLay Bros.

Best American Bred Mare, Any Age—McLay Bros.

Best Group of Five Animals, Any Age, Bred and Owned by Exhibitor—McLay Bros.

ENGLISH SHIRES.

EXHIBITORS.

Jas. J. Burrier, Eddyville, Iowa; Lew Cochrane, Crawfordsville, Indiana; Finch Bros., Joliet and Verona, Illinois; A. G. Soderberg, Osco, Illinois; M. O. Trailer, Marne, Iowa; Trumans' Pioneer Stud Farm, Bushnell, Illinois.

AWARDS.

Judge....................................W. J. Kennedy, Ames, Iowa

Stallion Four Years Old and Over—First, Highland Laddie, 22976, Trumans' Pioneer Stud Farm; second, Ethelred III, 21407, Trumans' Pioneer Stud Farm; third, Duke Albert, 20439, Trumans' Pioneer Stud Farm; fourth, Umbrislade Victor, 20131, Trumans' Pioneer Stud Farm; fifth, Kendle Tom, 7097, Finch Bros.

Stallion Over Three and Under Four—First, Norman Emperor, 23554, Trumans' Pioneer Stud Farm; second, Northolme Gipsy King, 22639, M. O. Trailer; third, Barnfield All Fours, 7609, Finch Bros.; fourth, Wrydelands Champion II, 22944, Trumans' Pioneer Stud Farm; fifth, Peakirk Prince, 4942 (22670), Jas. J. Burrier.

Stallion Over Two and Under Three—First, Gaiety Banker, 7714, Trumans' Pioneer Stud Farm; second, John D., 8421, Lew W. Cochrane; third, Verona Bounder, 7897, Finch Bros.; fourth, Finch's Justice, Finch Bros.

Stallion Over One and Under Two—First, Noble King, A. G. Soderberg, second, Finch's Buster Brown, Finch Bros.; third, Finch's Bounder, Finch Bros.

Stallion Foal—First, Algonice Champion, Finch Bros.; second, Zero, Lew W. Cochrane.

Stallion Over Three Years Old, Bred by Exhibitor—First, Finch Bros.

Stallion Under Three Years Old, Bred by Exhibitor—First, Gaiety Banker, 7714, Trumans' Pioneer Stud Farm; second, Noble King, A. G. Soderberg; third, Finch Bros.

Mare Over Four Years Old—First, Trumans' Ponders Bridge Daisy, 45964, Trumans' Pioneer Stud Farm; second, Osco Rose, A. G. Soderberg; third, Trumans' Oakham Lydia, 48938, Trumans' Pioneer Stud Farm.

Filly Over Three and Under Four—First, Trumans' Oakham Madge, 48939, Truman's Pioneer Stud Farm; second, Bay Girl, 8304, Finch Bros.

Filly Over Two and Under Three—First, Truman's Deeping Juliet, 47668, Trumans' Pioneer Stud Farm; second, Favorita, 8419, Lew W. Cochrane; third, Osco Sylvia, 8206, A. G. Soderberg.

Filly Over One and Under Two—First, Minnehaha, Lew W. Cochrane; second, Verona Bell, II., Finch Bros.

Mare Over Three Years Old, Bred by Exhibitor—First, Osco Rose, A. G. Soderberg.

Mare Under Three Years Old, Bred by Exhibitor—First, Minnehaha, 8422, Lew W. Cochrane; second, Osco Sylvia, 8206, A. G. Soderberg; third, Favorite, 8419, Lew W. Cochrane.

Get of Stallion—First, Lew W. Cochrane; second, Finch Bros.

Prooduce of Mare—First, Lew W. Cochrane; second, A. G. Soderberg; third, Finch Bros.

Grand Display, Four Animals Bred by Exhibitor—First, Lew W. Cochrane; second, Finch Bros.

PERCHERONS AND FRENCH DRAFT.

EXHIBITORS.

Lew Cochrane, Crawfordsville, Indiana; W. L. DeClow, Cedar Rapids, Iowa; Loren Dunbar, Earlham, Iowa; F. F. Failor, Newton, Iowa; Finch Bros., Joliet and Verona, Illinois; S. B. Frey, Ames, Iowa; W. W. Garner, Des Moines, Iowa; Albert Harlan, Stockport, Iowa; J. P. Huff, Stockport, Iowa; Frank Iams, St. Paul, Nebraska; Maasdam & Wheeler, Fairfield, Iowa; J. A. Mason, Carlisle, Iowa; McLaughlin Bros., Columbus, Ohio; H. G. McMillan, Rock Rapids, Iowa; F. O. Nutting & Son, Indianola, Iowa; John Ogle, Ames, Iowa; C. A. Saunders, Manilla, Iowa; F. A. Smith, Nevada, Iowa; Adam Stamm, Letts, Iowa; J. P. Wilson, Indianola, Iowa.

AWARDS.

Judge.....................................W. J. Kennedy, Ames, Iowa

Stallion Four Years Old and Over—First, Extradegant, 40553, McLaughlin Bros.; second, Olbert, 42815, H. G. McMillan; third, Montelle, 25223, S. B. Frey; fourth, Trallalla, 51060, Frank Iams; fifth, Bibi, 4128, McLaughlin Bros.

Stallion Over Three and Under Four—First, Dimitri, 41289, McLaughlin Bros.; second, Coco, 35856, F. O. Nutting & Son; third, Harrison, 59602, Frank Iams; fourth, Daniel, 57922, W. W. Garner.

Stallion Over Two and Under Three—First, Lerida 2d, C. A. Saunders; second, Dragon, 41341, McLaughlin Bros.; third, Renvier, 45552, H. G. McMillan; fourth, Dewey's Image, 43150, F. O. Nutting & Son; fifth, Tom Watson, 41264, Lew W. Cochran.

Stallion Over One and Under Two—First, Macduff, 41257, Lew W. Cochran; second, Vaporeux, 41343, McLaughlin Bros.; third, Diaz, 45550, H. G. McMillan; fourth, Vidoc, Loren Dunbar; fifth, King Edward, 44873, Finch Bros.

Horse Foal—First, Monto Mister, S. B. Frey; second, Sampson, J. P. Huff; third, Maasdam & Wheeler.

Stallion Over Three Years Old, Bred by Exhibitor—First, Montelle, 25223, S. B. Frey; second, H. G. McMillan; third, Agricole, 41318, Maasdam & Wheeler; fourth, Calmont, 40925, Lew W. Cochrane; fifth, Gladiator II. 32148, F. O. Nutting & Son.

Stallion Under Three Years Old, Bred by Exhibitor—First, C. A. Saunders; second, Macduff, 41257, Lew W. Cochran; third, Renvier, 45552, H. G. McMillan; fourth, Belvidere, 45554, H. G. McMillan; fifth, Balzac, 41256, Lew W. Cochran.

Mare Over Four Years Old—First, Lady Montrose, 40084, Lew W. Cochran; second, Kate Dewey, 568, F. O. Nutting & Son; third, Fanchette, 44029, Maasdam & Wheeler; fourth, Eloise, 20985, H. G. McMillan; fifth, Gressette, 21876, Loren Dunbar.

Filly Over Three and Under Four—First, Iolanthe, 40925, H. G. McMillan; second, Lady of Quality, 41255, Lew W. Cochran; third, Antoinette, 40922, H. G. McMillan; fourth, Her Majesty, 41265, Lew W. Cochran; fifth, Marguerite, 45347, Maasdam & Wheeler.

Filly Over Two and Under Three—First, Adrienne, 45555, H. G. McMillan; second, Arabella, 41260, Lew W. Cochran; third, Rosamond, 45547; H. G McMillan; fourth, Petite, 45341, Maasdam & Wheeler.

Filly Over One and Under Two—First, Merchants' Princess, W. W. Garner; second, Lucia, 45551, H. G. McMillan; third, Lady Gallant, J. A. Mason; fourth, Sweet Violet, 41263, Lew W. Cochran.

Mare Foal—First, Charlotte, S. B. Frey; second, Mishap, 41258, Lew W. Cochran; third, May Queen, F. F. Failor; fourth, Mabell, 45601, S. B. Frey.

Mare Over Three Years Old, Bred by Exhibitor—First, Iolanthe, 40925; H. G. McMillan; second, Lady of Quality, 41255, Lew W. Cochran; third, Lady Montrose, 40084, Lew W. Cochran.

Mare Under Three Years Old, Bred by Exhibitor—First, Adrienne, 45555, H. G. McMillan; second, Arabella, 41260, Lew W. Cochran; third, Rosamond, 45547, H. G. McMillan.

Get of Stallion—First, H. G. McMillan; second, Lew W. Cochrane; third, S. B. Frey.

Produce of Mare—First, S. B. Frey; second, Lew W. Cochrane; third, H. G. McMillan; fourth, H. G. McMillan.

Grand Display—Four Animals Bred by Exhibitor—First, H. G. McMillan; second, Lew W. Cochran; third, S. B. Frey.

SPECIAL CHAMPIONSHIPS—(GOLD MEDAL.)

Offered by the Percheron Society of America.

Champion Stallion, Any Age—H. G. McMillan.
Champion Stallion, Any Age, American Bred—S. B. Frey.
Champion Mare, Any Age, American Bred—H. G. McMillan.
Champion Group of Five Animals, American Bred—H. G. McMillan.

SPECIAL CHAMPIONSHIPS—GOLD MEDAL—RESERVE RIBBON.

Offered by the Percheron Registry Company.

Champion Stallion, Any Age—First, McLaughlin; reserve, Cochran.
Champion Mare, Any Age—First, Cochran; reserve, Cochran.
Champion Group of Five or More Animals Belonging to One Exhibitor—First, McLaughlin; reserve, Cochran.

BELGIAN.

EXHIBITORS.

W. L. De Clow, Cedar Rapids, Iowa; Finch Bros., Joliet and Verona, Illinois; W. W. Garner, Des Moines, Iowa; Frank Iams, St. Paul, Nebraska; Henry Lefebure, Fairfax, Iowa; McLaughlin Bros., Columbus, Ohio.

Judge.................................R. B. Ogelvie, Chicago, Illinois

Stallion Four Years Old or Over—First, Forton de Smeerhebbe, 2212, McLaughlin Bros.; second, Marmot de Pursoulx, 2187, McLaughlin Bros.; third, Ravachol, 1987, Henry Lefebure; fourth, Pequavine I., 28432, Finch Bros.; fifth, Fraseur, 2142, Finch Bros.

Stallion Over Three and Under Four—First, Yann Isaac, 2216, McLaughlin Bros.; second, Signor, 33806, W. W. Garner; third, Boulevard, 33706, W. L. De Clow.

Stallion Over Two and Under Three—First, Luron De Orbais, Vol. 12, W. W. Garner; second, Artaban, W. L. De Clow; third, Minos, W. L. De Clow; fourth, Mirliton, W. L. De Clow.

Stallion Over One and Under Two—First and second, Henry Lefebure.

Stallion Foal—First, Pompee II., Henry Lefebure.

Stallion Under Three Years Old, Bred by Exhibitor—First, second and third, Henry Lefebure.

Mare Over Four Years Old—First and second, Henry Lefebure.

Filly Over Three and Under Four—First and second, Henry Lefebure.

Filly Over Two and Under Three—First, Pratache D' Alvaux, 277, Finch Bros.; second and third, Henry Lefebure.

Mare Foal—First and second, Henry Lefebure.

Mare Over Three Years Old, Bred by Exhibitor—First and second, Henry Lefebure.

Mare Under Three Years Old, Bred by Exhibitor—First, second and third, Henry Lefebure.

Produce of Mare—First, Henry Lefebure.

Get of Stallion—First, Henry Lefebure.

Grand Display—Four Animals Bred by Exhibitor—First and second, Henry Lefebure.

DRAFT GELDINGS OR MARES.

EXHIBITORS.

Armour & Company, Chicago, Illinois; Lew Cochran, Crawfordsville, Indiana; Loren Dunbar, Earlham, Iowa; Finch Bros., Joliet and Verona, Illinois; A. L. Foster, Winterset, Iowa; Henry Lefebure, Fairfax, Iowa; Maasdam & Wheeler, Fairfield, Iowa; J. M. Moore, Indianola, Iowa; J. F. McKee, Indianola, Iowa; F. O. Nutting & Son, Indianola, Iowa; August Post, Moulton, Iowa; H. G. McMillan, Rock Rapids, Iowa; Frank P. Shekleton, Lawler, Iowa; Adam Stamm, Letts, Iowa; J. P. Wilson, Indianola, Iowa; Trumans' Pioneer Stud Farm, Bushnell, Illinois.

AWARDS.

Judge..W. J. Kennedy, Ames, Iowa

Single Mare or Gelding Under 1,750 *Pounds*—First, Armour & Co.; second, Antoinette, 40922, H. G. McMillan; third, Lew W. Cochran.

Single Mare or Gelding Over 1,750 *Pounds*—First, Armour & Co.; second, Lew W. Cochran; third, Trumans' Pioneer Stud Farm.

Pair of Mares or Geldings Under 3,500 *Pounds*—First, Trumans' Pioneer Stud Farm; second, Lew W. Cochran; third, August Post; fourth, Lew W. Cochran; fifth, W. W. Garner.

Pair of Mares or Geldings Over 3,500 *Pounds*—First, Armour & Co.; second, Lew W. Cochran.

Four Horse Team—First, Lew W. Cochran.

Six Horse Team—First, Armour & Co.

CATTLE DEPARTMENT.

Superintendent.......................S. B. Packard, Marshalltown, Iowa

SHORTHORNS.

EXHIBITORS.

F. W. Akers, Laurel, Iowa; Ardmore Stock Company, Holstein, Iowa; L. W. Barnhart, South English, Iowa; C. S. Barclay, West Liberty, Iowa; Bellows Bros., Maryville, Mo.; J. B. Brown, Solon, Iowa; G. H. Burge, Mount Vernon, Iowa; C. W. Dows & Son, Harlan, Iowa; C. L. Drake, Kelley, Iowa; F. A. Edwards, Webster City, Iowa; John Gedney & Son, Numa, Iowa; A. F. Graves, King City, Missouri; W. E. Graham, Prairie City, Iowa; F. W. Harding, Waukesha, Wisconsin; J. S. Hardin, Indianola, Iowa; J. F. Judge, Carroll, Iowa; W. A. Lind, Rolfe, Iowa; H. C. Livingston, Monroe, Iowa; Michael A. Wagner, Fremont, Ohio; J. H. Moyer, Newton, Iowa; H. D. Parsons, Newton, Iowa; D. P. Rickabaugh, Sheridan, Missouri; C. A. Saunders, Manilla, Iowa; E. R. Silliman, Colo, Iowa; T. K. Tomson & Sons, Dover, Kansas; C. R. Warren, Hillsdale, Iowa; G. W. Westfall, Toledo, Iowa.

AWARDS.

Judge....................................J. H. Miller, Peru, Indiana

Bull Three Years Old or Over—First, Whitehall Marshall, 209776, F. W. Harding; second, Money Musk, 196542, G. H. Burge; third, Secret Viscount, 212705, F. A. Edwards; fourth, King Cumberland, 110620, C. A. Saunders; fifth, Silvery Knight, 206653, T. K. Tomson & Son; sixth, Royal Victor, 243018, J. B. Brown.

Bull Two Years Old and Under Three—First, Good Choice, 227852, Bellows Bros.; second, Superbus, 224710, Ardmore Stock Company; third, Clear the Way, 231482, J. T. Judge; fourth, The Conqueror, 215051, T. J. Wornall & Sons; fifth, Scottish Champion, 224435, H. D. Parsons; sixth, Baron Fox Glove, 231479, E. R. Silliman.

Bull One Year and Under Two—First, Champion of Lyndale, Vol. 68, A. F. Graves; second, Careless Conqueror, 241515, T. J. Wornall & Son; third, Cloverburn's Ideal, 247812, E. R. Silliman; fourth, Banner's Victor, 242584, C. R. Warren; fifth, Hopeful Knight, 244229, T. K. Tomson & Sons; sixth, Contractor's Banner Bearer, 250894, G. H. White.

Senior Bull Calf (dropped between September 1, 1905, and January 1, 1906)—First, Anokak Sultan, F. W. Harding; second, King, 262929, C. W. Dows & Son; third, Gloster Marshall, F. W. Harding; fourth, Nonpareil Abbotsburn, Vol. 68, Bellows Bros.; fifth, Suitor, F. W. Harding; sixth, American Leader, F. W. Akers.

Junior Bull Calf (dropped since January 1, 1906)—First, The Goods, F. W. Harding; second, Golden Crown, 263863, L. W. Barnhart.

Cow Three Years or Over—First, Princess Flora 2nd, F. W. Harding; second, 3rd Elder Lawn Victoria, Vol. 57, T. K. Tomson & Sons; third, Glosterina, T. J. Wornall & Sons; fourth, Money Fuffle Maid, F. W. Harding; fifth, Fenimore Princess, Vol. 60, F. A. Edwards; sixth, Golden Duchess of Gloster, Vol. 52, F. A. Edwards.

Heifer Two Years and Under Three—First, Anoka Broadhooks, F. W. Harding; second, Cherry Lass, Vol. 60, T. K. Tomson & Sons; third, Velvet Eyes, Vol. 61, C. A. Saunders; fourth, Choice Violet 2nd, T. J. Wornall & Son; fifth, Thorny Bud, Vol. 63, T. K. Tomson & Sons; sixth, Heather Bell, Vol. 64, F. A. Edwards.

Heifer One Year and Under Two—First, Missie of Browndale, F. W. Harding; second, Clara Belle, F. W. Harding; third, Independence Lady 3rd, Vol. 67, C. A. Saunders; fourth, Manor Lady of Ardmore, Vol. 64, Ardmore Stock Co.; fifth, Fancy Lovell, F. W. Harding; sixth, Hampton's Lady Cupbearer, C. R. Warren.

Senior Heifer Calf (dropped between September 1, 1905, and January 1, 1906)—First, Anoka Gloster 2nd, F. W. Harding; second, Hampton's Tea Rose, Vol. 68, Bellows Bros.; third, Victoria Countess, N. A. Lind; fourth, Duchess of Lancaster 16th, Ardmore Stock Co.; fifth, Broadhooks Sultan, F. W. Harding; sixth, Claret, F. W. Harding.

Junior Heifer Calf (dropped since January 1, 1906)—First, Parkdale Queen of Beauty 2nd, Vol. 68, Bellows Bros.; second, Cumberland's Countess, Vol 67, C. A. Saunders; third, Model Rose, Vol. 68, Bellows Bros.; fourth, Dora 5th, H. D. Parsons; fifth, Rose Archer, T. K. Tomson & Sons; sixth, Ramsden Flower, F. W. Harding.

Exhibitor's Herd—First, F. W. Harding; second, T. K. Tomson & Sons; third, T. J. Wornall & Son; fourth, C. A. Saunders; fifth, G. H. Burge.

Breeder's Young Herd—First, F. W. Harding; second, N. A. Lind; third, T. K. Tomson & Sons; fourth, T. J. Wornall & Son; fifth, J. B. Brown.

Calf Herd—First, F. W. Harding; second, Bellows Bros.; third, H. D. Parsons; fourth, L. W. Barnhart; fifth, G. H. Burge.

Get of Sire—First, T. K. Tomson & Sons; second, F. W. Harding; third, Bellows Bros.; fourth, N. A. Lind; fifth, Ardmore Stock Company.

Produce of Cow—First, F. W. Harding; second, F. W. Harding; third, T. K. Tomson & Sons; fourth, G. H. Burge; fifth, H. D. Parsons.

Sweepstakes, Bull, Any Age—Whitehall Marshall, 209776, F. W. Harding.

Sweepstakes, Cow, Any Age—Princess Flora, 2nd, F. W. Harding.

IOWA SPECIALS.

Bull Three Years or Over—First, Secret Viscount, 212705, F. A. Edwards; second, King Cumberland, 110620, C. A. Saunders; third, Royal Victor, 243018, J. B. Brown; fourth, Acomb Duke of Riverside, 154232, J. S. Hardin; fifth, Victor of Evergreen Park 4th, 184631, John Gedney & Son.

Bull Two Years Old and Under Three—First, Clear the Way, 231482, J. T. Judge; second, Scottish Champion, 224435, H. D. Parsons; third, Baron Fox Glove, 231479, E. R. Silliman; fourth, Scottish Fame, 239277, L. W. Barnhart; fifth, Nonpareil Courtier, Jr., J. H. Moyer.

Bull One Year and Under Two—First, Cloverburn's Ideal, 247812, E. R. Silliman; second, Banner's Victor, 242584, C. R. Warren; third, Contractor's Banner Bearer, 250894, G. H. White; fourth, Pride of Fashion, N. A. Lind; fifth, English Champion 2nd, C. S. Barclay.

Bull Calf Under One Year—First, American Leader, F. W. Akers; second, Nonpareil Prince, 262931, C. W. Dows & Son; third, Red Cloud, J. B. Brown; fourth, Malaka's Best, H. D. Parsons; fifth, Red Champion, H. D. Parsons.

Cow Three Years Old or Over—First, Fenimore Princess, Vol. 60, F. A. Edwards; second, Golden Princess of Gloster, Vol. 52, F. A. Edwards; third, Annabell, Vol. 55, G. H. Burge; fourth, Flora Dell, Vol. 50, G. H. Burge; fifth, Mineola 4th, J. H. Moyer.

Heifer Two Years Old and Under Three—First, Velvet Eyes, Vol. 61, C. A. Saunders; second, Heather Bell, Vol. 64, F. A. Edwards; third, Floradora, Vol. 60, G. H. Burge; fourth, Scotch Duchess, Vol. 48, G. H. White; fifth, Lavender Rose, Vol. 64, F. A. Edwards.

Heifer One Year and Under Two—First, Independence Lady 3rd, Vol. 67, C. A. Saunders; second, Manor Landy of Ardmore, Vol. 64, Ardmore Stock Company; third, Hampton's Lady Cupbearer, C. R. Warren; fourth, Beaver Creek Arabella, Vol. 64, N. A. Lind; fifth, Lovely Belle, Vol. 64, N. A. Lind.

Heifer Calf Under One Year—First, Victoria Countess, N. A. Lind; second, Duchess of Lancaster 16th, Ardmore Stock Company; third, Florella, G. H. Burge; fourth, Dora 5th, H. D. Parsons; fifth, May Queen, L. W. Barnhart.

Exhibitor's Herd—First, C. A. Saunders; second, G. H. Burge; third, F. A. Edwards.

Breeder's Young Herd—First, J. B. Brown; second, L. W. Barnhart; third, G. H. Burge.

Get of Sire—First, N. A. Lind; second, Ardmore Stock Company; third, H. D. Parsons.

Produce of Cow—First, G. H. Burge; second, H. D. Parsons; third, L. W. Barnhart.

Sweepstakes, Bull, Any Age—Clear the Way, 231482, J. T. Judge.

Sweepstakes, Cow, Any Age—Independence Lady 3rd, Vol. 67, C. A. Saunders.

HEREFORDS.

EXHIBITORS.

S. L. Brock, Macon, Missouri; Cargill & McMillan, La Crosse, Wisconsin; Carrothers Bros., Ryan, Iowa; Edmonds, Shade & Co., Kingsley, Iowa; Sheridan Henry, Ridgeway, Missouri; David W. Ohl, Iowa City, Iowa; Studebaker Stock Farm, Van Buren, Indiana; W. S. Van Natta & Son, Fowler, Indiana; G. W. Way & Son, New Sharon, Iowa; Hugh Whiteford, Guilford, Missouri.

AWARDS.

Judge..............................Claude H. Makin, Grandview, Mo.

Bull Three Years Old or Over—First, Princepts 4th, 143349, Cargill & McMillan; second, Kenswick (Imp.), 111886, Hugh Whiteford; third, Emancipator, 156682, Carrothers Bros.; fourth, King Edward, 165604, Edmonds, Shade & Co.; fifth, Rustler's 7th, 161631, David W. Ohl.

Bull Two Years and Under Three—First, Prime Lad 3rd, 197984, W. S. Van Natta & Son; second, Privateer 2nd, 182133, Cargill & McMillan; third, Beau Brummel 4th, 194318, G. W. Way & Son; fourth, Sir Albany 9th, 180123, Edmonds, Shade & Co.; fifth, Field Marshal, 208813, Carrothers Bros.; sixth, Admiral Togo, 208503, Carrothers Bros.

Bull One Year and Under Two—First, Bonnie Brae 3rd, 203317, Cargill & McMillan; second, Prime Lad 9th, 213963, W. S. Van Natta & Son; third, Discoverer, 212281, S. L. Brock; fourth, Prime Lad 16th, 213369, W. S. Van Natta & Son; fifth, Passport Prize, 216944, Edmonds, Shade & Co.; sixth, Missouri Boy, 234568, Sheridan Henry.

Senior Bull Calf (dropped between September 1, 1905, and January 1, 1906)—First, Fulfiller 5th, 230510, Cargill & McMillan; second, Fulfiller 3rd, 230508, Cargill & McMillan; third, Prime Lad 25th, 234343, W. S. Van Natta & Son; fourth, Woodland Chief, 223394, David W. Ohl; fifth, Sir Edward, 232986, Edmonds, Shade & Co.; sixth, Berlia, 235973, David W. Ohl.

Junior Bull Calf (dropped since January 1, 1906)—First, Fulfiller 7th, 230512, Cargill & McMillan; second, Prime Lad 30th, 234348, W. S. Van Natta & Son; third, Shadeland King, 232982, Edmonds, Shade & Co.; fourth, Beau Brummel 10th, 238386, G. W. Way & Son; fifth, Beau Brummel 7th, 238383, G. W. Way & Son.

Cow Three Years or Over—First, Heliotrope, 159451, Cargill & McMillan; second, Twilight, 167464, Cargill & McMillan; third, Rosebud, 169015, W. S. Van Natta & Son; fourth, Dora Thorne, 118061, David W. Ohl; fifth, Kiowa, 163892, G. W. Way & Son; sixth, Kappie, 163891, G. W. Way & Son.

Heifer Two Years and Under Three—First, Miss Donald 17th, 184573, Cargill & McMillan; second, Golden Lassie, 182126, Cargill & McMillan; third, Princess, 197988, W. S. Van Natta & Son; fourth, Columbus Lassie, 2nd, 183986, Edmonds, Shade & Co.; fifth, Delight 3rd, 183991, Edmonds, Shade & Co.; sixth, Gwendoline 4th, 179900, G. W. Way & Son.

Heifer One Year and Under Two—First, Ethel 2nd, 203170, Cargill & McMillan; second, Lady Ann, 204805, S. L. Brock; third, Prairie Queen, 213961, W. S. Van Natta & Son; fourth, Lady Lucy, 212289, S. L. Brock; fifth, Lady Albany, 207790, Edmonds, Shade & Co.; sixth, Lady Ruth, 217109, S. L. Brock.

Senior Heifer Calf (dropped between September 1, 1905, and January 1, 1906)—First, Miss Filler, 230513, Cargill & McMillan; second, Disturber's Lassie, 233124, S. L. Brock; third, Margaret, 234336, W. S. Van Natta & Son; fourth, Lady Elfin, 233127, S. L. Brock; fifth, Lady Welmora, 233131, S. L. Brock; sixth, Miss Filler 4th, 230516, Cargill & McMillan.

Junior Heifer Calf (dropped since January 1, 1906)—First, Miss Filler 6th, 239659, Cargill & McMillan; second, Lady Belinda, 238028, S. L. Brock; third, Lassie, 234333, W. S. Van Natta & Son; fourth, Miss Filler 5th, 230517, Cargill & McMillan; fifth, Edward's Lassie, 232978, Edmonds, Shade & Co.; sixth, Beau Anna, 238380, G. W. Way & Son.

Exhibitor's Herd—First and second, Cargill & McMillan; third, W. S. Van Natta & Son; fourth, Edmonds, Shade & Co.; fifth, David W. Ohl.

Breeder's Young Herd—First, Cargill & McMillan; second, S. L. Brock; third, W. S. Van Natta & Son; fourth, Edmonds, Shade & Co.

Calf Herd—First, S. L. Brock; second, Cargill & McMillan; third, W. S. Van Natta & Son; fourth, G. W. Way & Son.

Get of Sire—First, S. L. Brock; second, W. S. Van Natta & Son; third, Cargill & McMillan; fourth, Cargill & McMillan; fifth, Edmonds, Shade & Co.

Produce of Cow—First, second and third, Cargill & McMillan; fourth, W. S. Van Natta & Son; fifth, Carrothers Bros.

Sweepstakes, Bull, Any Age—Princepts 4th, 143394, Cargill & McMillan.

Sweepstakes, Cow, Any Age—Heliotrope, 159451, Cargill & McMillan.

IOWA SPECIALS.

Bull Three Years Old or Over—First, Emancipator, 156682, Carrothers Bros.; second, King Edward, 165604, Edmonds, Shade & Co.; third, Rustler's 7th, 161631, David W. Ohl.

Bull Two Years Old and Under Three—First, Beau Brummel, 4th, 194318, G. W. Way & Son; second, Sir Albany 9th, 180123, Edmonds, Shade & Co.; third, Field Marshal, 208813, Carrothers Bros.; fourth, Admiral Togo, 208503, Carrothers Bros.

Bull One Year Old and Under Two—First, Passport Prize, 216944, Edmonds, Shade & Co.

Bull Calf Under One Year—First, Woodland Chief, 223394, David W. Ohl; second, Sir Edward, 232986, Edmonds, Shade & Co.; third, Berlia, 235973, David W. Ohl; fourth, Shadeland King, 232982, Edmonds, Shade & Co.; fifth, Beau Brummel 10th, 238386, G. W. Way & Son.

Cow Three Years Old or Over—First, Dora Thorne, 118061, David W. Ohl; second, Kiowa, 163892, G. W. Way & Son; third, Kappie, 163891, G. W. Way & Son; fourth, Francis, 165603, Edmunds, Shade & Co.

Heifer Two Years Old and Under Three—First, Columbus Lassie 2nd, 183986, Edmonds, Shade & Co.; second, Delight 3rd, 183991, Edmonds, Shade & Co.; third, Gwendoline 4th, 179900, G. W. Way & Son; fourth, Stella May, 176762, David W. Ohl; fifth, Amelia, 176744, David W. Ohl.

Heifer One Year Old and Under Two—First, Lady Albany, 207790, Edmonds, Shade & Co.; second, Columbus Ruth, 207787, Edmonds, Shade & Co.; third, Nellie, 208512, Carrothers Bros.; fourth, Lady Passport, 216933, Edmonds, Shade & Co.; fifth, Lady Hawthorne, 203900, David W. Ohl.

Heifer Calf Under One Year Old—First, Shadeland Queen, 232983, Edmonds, Shade & Co.; second, Bonnie Wilton, 223390, David W. Ohl; third, Lady Emancipator, Carrothers Bros.; fourth, Edward's Lassie, 232978, Edmonds, Shade & Co.; fifth, Beau Anna, 238380, G. W. Way & Son.

Exhibitor's Herd—First, Edmonds, Shade & Co.; second, David W. Ohl; third, G. W. Way & Son.

Breeder's Young Herd—First, Edmonds, Shade & Co.

Get of Sire—First, Edmonds, Shade & Co.; second, David W. Ohl; third, G. W. Way & Son.

Produce of Cow—First, Carrothers Bros.; second, Edmonds, Shade & Co.

Sweepstakes, Bull, Any Age—Woodland Chief, 223986, David W. Ohl.

Sweepstakes, Cow, Any Age—Lady Albany, 207790, Edmonds, Shade & Co.

ABERDEEN-ANGUS.

EXHIBITORS.

Louie Aillaud, Newton, Iowa; A. C. Binnie, Alta, Iowa; P. J. Donohoe, Holbrook, Iowa; B. F. Fantz, Nevada, Iowa; H. J. Hess, Waterloo, Iowa; W. J. Miller, Newton, Iowa; W. A. McHenry, Denison, Iowa; Chas. J. Off, Peoria, Illinois; A. B. Puterbaugh, Milledgeville, Illinois; Rosenfeld & Siverly, Keeley, Iowa; F. L. Sullivan, Afton, Iowa.

AWARDS.

Judge....................................W. J. Kennedy, Ames, Iowa.

Bull Three Years Old or Over—First, Jim Delaney, 62767, A. C. Binnie; second, Baden Lad, 61883, W. A. McHenry; third, Broadus Rex, 46067, A. B. Puterbaugh.

Bull Two Years and Under Three—Morning Star 2nd, 75716, P. J. Donohoe; second, McDonald's Lad, 66952, W. J. Miller; third, Captain King, 80039, B. F. Fantz; fourth, Birtley of Quietdale, 71646, H. J. Hess; fifth, Lucile's Prince, 72328, A. B. Puterbaugh.

Bull One Year and Under Two—First, Glenfoil Thickset 2nd, 88142, P. J. Donohoe; second, Newton King Dodo, 81603, Louie Aillaud; third, Star of Denison, 82426, W. A. McHenry; fourth, Elmar Lad, 84122, A. C Binnie; fifth, King Donald, 80599, W. J. Miller; sixth, Inland Dandy, 79664, Rosenfeld & Siverly.

Senior Bull Calf (dropped between September 1, 1905, and January 1, 1906)—First, Prince Pico, 93306, W. A. McHenry; second, Quaint Fellow, 94277, Chas. J. Off; third, Beau Ito, 9417, F. L. Sullivan; fourth, Buttress of Quietdale, 94107, H. J. Hess; fifth, Lucile's Prince 3rd, A. B. Puterbaugh.

Junior Bull Calf (dropped since January 1, 1906)—First, Erica Prince N., W. J. Miller; second, Even Lad, A. C. Binnie; third, Quinrod of the Oaks, 93236, B. F. Fantz.

Cow Three Years or Over—First, Snowflake 2nd of Kirkbridge, 46016, W. J. Miller; second, Gussie of Kirkbridge, 64008, A. C. Binnie; third, Glenfoil Rose, 63489, W. A. McHenry; fourth, Blackbird Favorite 2nd, 59234, P. J. Donohoe; fifth, Erica of Oaklawn, 46848, A. B. Puterbaugh; sixth, Metz Ogarita, 60992, W. J. Miller.

Heifer Two Years and Under Three—First, Eileen Lass, 73102, P. J. Donohoe; second, Mina of Alta 5th, 73111, A. C. Binnie; third, Barbara McHenry 18th, 71677, W. A. McHenry.

Heifer One Year and Under Two—First, Abbess McHenry 6th, 82418, W. A. McHenry; second, Coquette Lass of Alta, 83367, A. C. Binnie; third, Blackbird Lassie of Alta, 83368, A. C. Binnie.

Senior Heifer Calf (dropped between September 1, 1905, and January 1, 1906)—First, Brookside Rose 2nd, 93255, P. J. Donohoe; second, Abbess McHenry 7th, 93307; W. A. McHenry; third, Brookside Price 5th, 93253, P. J. Donohoe.

Junior Heifer Calf (dropped since January 1, 1906)—First, Blackbird McHenry 66th, 93314, W. A. McHenry; second Queen Lassie of Alta 3rd, A. C. Binnie; third, Heatherbloom 5th, of Quietdale, 94112, H. J. Hess.

Exhibitor's Herd—First, A. C. Binnie; second, P. J. Donohoe; third, W. A. McHenry.

Breeder's Young Herd—First, P. J. Donohoe; second, W. A. McHenry; third, A. C. Binnie.

Calf Herd—First, A. C. Binnie; second, W. A. McHenry; third, W. J. Miller.

Get of Sire—First, A. C. Binnie; second, P. J. Donohoe; third, W. J. Miller.

Produce of Cow—First, W. A. McHenry; second, W. J. Miller; third, W. A. McHenry.

Sweepstakes, Bull any age—Jim Delaney, 62767, A. C. Binnie.

Sweepstakes, Cow any age—Eileen Lass, 73102, P. J. Donohoe.

IOWA SPECIALS.

Bull Three Years Old or Over—First, Jim Delaney, 62767, A. C. Binnie; second, Baden Lad, 61883, W. A. McHenry.

Bull Two Years Old and Under Three—First, Captain King, 80039, B. F. Fantz; second, Birtley of Quietdale, 71646, H. J. Hess.

Bull One Year Old and Under Two—First, Star of Denison, 82426, W. A. McHenry; second, Elmar Lad, 84122, A. C. Binnie; third, King Donald, 80599, W. J. Miller.

Bull Calf Under One Year Old—First, Beau Ito, 9417, F. L. Sullivan; second, Erica Prince M., W. J. Miller; third, Even Lad, A. C. Binnie.

Cows Three Years Old or Over—First, Glenfoil Rose, 63489, W. A. McHenry; second, Blackbird Favorite 2nd, 59234, P. J. Donohoe; third, Metz Ogarita, 60992, W. J. Miller.

Heifer Two Years Old and Under Three—First, Barabra McHenry 18th, 71677, W. A. McHenry; second, Pride of Cloverleaf, 73969, P. J. Donohoe; third, Metz Ogarita 2nd, 72550, W. J. Miller.

Heifer One Year Old and Under Two—First, Blackbird Lassie of Alta, 83368, A. C. Binnie; second, Brookside Pride 4th, 93254, P. J. Donohoe; third, Pride McHenry 45th, 82421, W. A. McHenry.

Heifer Calf Under One Year Old—Queen Lassie of Alta 3rd, A. C. Binnie; second Abbess McHenry 7th, 93307, W. A. McHenry; third, Brookside Pride 5th, 93258, P. J. Donohoe.

Exhibitor's Herd—First, W. A. McHenry; second, W. J. Miller; third, H. J. Hess.

Breeder's Young Herd—First, A. C. Binnie; second, W. J. Miller; third, H. J. Hess.

Get of Sire—First, W. J. Miller; second, H. J. Hess.

Produce of Cow—First, W. A. McHenry.

Sweepstakes, Bull any age—Beau Ito, 9417, F. L. Sullivan.

Sweepstakes, Cow any age—Glenfoil Rose, 63489, W. A. McHenry.

GALLOWAY.

EXHIBITORS.

J. E. Bales, Stockport, Iowa; Brookside Farm Company, Fort Wayne, Indiana; A. F. Craymer, Morris, Illinois; C. S. Hechtner, Princeton, Illinois; G. W. Lindsay, Red Cloud, Nebraska.

AWARDS.

Judge.................................A. H. Thompson, Nashua, Mo.

Bull Three Years Old or Over—First, Pat Ryan of Red Cloud, 20038, G. W. Lindsay; second, Scottish Sanson, 23542, A. F. Craymer.

Bull Two Years Old and Under Three—First, Canty Lad, J. E. Bales & Son; second, Ned of Red Cloud, 26253, G. W. Lindsay.

Bull One Year Old and Under Two—First, Protector of Rivers, 27193, A. F. Craymer; second, Starlight of Maples, 26224, C. S. Hechtner; third, Standard Favorite, 26550, C. S. Hechtner.

Senior Bull Calf (dropped between September 1, 1905, and January 1, 1906)—First, Dorothea's Prince, 28813, J. E. Bales & Son; second, Carefull's Druid, C. S. Hechtner; third, Bonnie McDougal, 28812, J. E. Bales & Son.

Junior Bull Calf (dropped since January 1, 1906)—First, Grandee, of Rivers, 28774, A. F. Craymer; second, Irish Lad of Rivers, 28772, A. F. Craymer; third, Milverton of Rivers, 28773, A. F. Craymer.

Cow Three Years Old or Over—First, Favorite 16th of Lochenkit, Imp., 21205, G. W. Lindsay; second, Graceful 3rd of Garliestown, 19297, J. E. Bales & Son; third, Princess Mable, 23484, A. F. Craymer.

Heifer Two Years Old and Under Three—First, Lady Charloote, 24814, G. W. Lindsay; second, Annie David's 5th, 26977, J. E. Bales & Son; third, Prudie of Rivers, 25413, A. F. Craymer.

Heifer One Year Old and Under Two—First, Hawkeye Lady, 27121, J. E. Bales & Son; second, Louisa of Maples, 26218, C. S. Hechtner; third, Druid's Lora, 26219, C. S. Hechtner.

Senior Heifer Calf (dropped between September 1, 1905, and January 1, 1906)—First, Nora D. of Red Cloud, 27580, G. W. Lindsay; second, Annie David's 6th, 28780, J. E. Bales & Son; third, Darletta of Rivers, 28762, A. F. Craymer.

Junior Heifer Calf (dropped since January 1, 1906)—First, Lady Elgin, G. W. Lindsay; second, Princess Graceful, 28781, J. E. Bales & Son; third, Lady Graceful, 28783, J. E. Bales & Son.

Exhibitor's Herd—First, G. W. Lindsay; second, J. E. Bales & Son; third, A. F. Craymer.

Breeder's Young Herd—First, J. E. Bales & Son; second, A. F. Craymer; third, G. W. Lindsay.

Calf Herd—First, J. E. Bales & Son.

Get of Sire—First, J. E. Bales & Son; second, C. S. Hechtner; third, A. F. Craymer.

Produce of Cow—First, J. E. Bales & Son; second, C. S. Hechtner; third, G. W. Lindsay.

Sweepstakes, Bull any age—G. W. Lindsay.

Sweepstakes, Cow any age—G. W. Lindsay.

RED POLLED.

EXHIBITORS.

Adolph P. Arp, Eldridge, Iowa; Geo. B. Buck & Co., Orion, Illinois; G. W. Coleman, Webster City, Iowa; W. S. Hill, Alexandria, South Dakota; B. A. Samuelson, Kiron, Iowa.

AWARDS.

Judge.....................................Wayne Dinsmore, Ames, Iowa

Bull Three Years Old or Over—First, Irwin, 8253, G. W. Coleman; second, Nailer, 7396, Adolph P. Arp; third, Money maker, 11944, Geo. B. Buck & Co.

Bull Two Years and Under Three—First, Protection, 12095, W. S. Hill.

Bull One Year and Under Two—First, Logan, 13500, G. W. Coleman; second, Pleasant Hill Advance, 14565, B. A. Samuelson; third, Durock, 14573, G. W. Coleman.

Bull Calf Under One Year—First, Ivanhoe, 14372, W. S. Hill; second, Nailer Again, 15337, Adolph P. Arp; third, Dale, 14882, W. S. Hill.

Cow Three Years Old or Over—First, Saucy, 14232, G. W. Coleman; second, Daisy Princess, 13369, W. S. Hill; third, Nanny, 20180, Adolph P. Arp.

Heifer Two Years Old and Under Three—First, Nellie, 21746, W. S. Hill; second, Dewdrop 4th, 22496, Geo. B. Buck & Co.; third, Gustie, 23514, G. W. Coleman.

Heifer One Year and Under Two—First, Wild Rose 2nd, 23519, G. W. Coleman; second, Inex, 23477, W. S. Hill; third, Dortha, 23517, G. W. Coleman.

Heifer Calf Under One Year—First, Bedelia, 25848, Adolph P. Arp; second, Doly, vol. 19, G. W. Coleman; third, Rosabelle, 24680, W. S. Hill.

Exhibitor's Herd—First, G. W. Coleman; second, W. S. Hill; third, Adolph P. Arp.

Breeder's Young Herd—First, G. W. Coleman; second, B. A. Samuelson; third, W. S. Hill.

Get of Sire—First, G. W. Coleman; second, Adolph P. Arp; third, B. A. Samuelson.

Produce of Cow—First, Adolph P. Arp; second, W. S. Hill; third, Adolph P. Arp.

Sweepstakes, Bull any age—Irwin, 8253, G. W. Coleman.

Sweepstakes, Cow any age—Saucy, 14234, G. W. Coleman.

POLLED DURHAM

EXHIBITORS.

Ardmore Stock Company, Holstein, Iowa; F. F. Failor, Newton, Iowa; Shaver & Deuker, Kalona, Iowa; A. C. Wood & Sons, Pendleton, Indiana.

AWARDS.

Judge.................................E. T. Davis, Iowa City, Iowa

Bull Three Years Old or Over—First, Golden Victor, 251100, F. F. Failor.

Bull Two Years Old and Under Three—First, Roan Hero, 3613, Shaver & Deuker; second, Goldsmith, 250852, F. F. Failor.

Bull One Year Old and Under Two—First, Lancaster Hero, 4655, A. C. Wood & Sons; second, Orange Knight, A. C. Wood & Sons; third, Colonel Perry, Vol. 3, Shaver & Deuker.

Bull Calf Under One Year—First, Arcadia Duke, 3rd, 5026, Shaver & Deuker; second, Golden Gem, A. C. Wood & Sons; third, Hallie's Hero, A. C. Wood & Sons.

Cow Three Years Old or Over—First, Royal Flora, Shaver & Deuker.

Heifer Two Years Old and Under Three—First, Scottish Belle 3rd, Shaver & Deuker; second, Polled Lady Jane, Shaver & Deuker.

Heifer One Year Old and Under Two—First, Victoria Lady, A. C. Wood & Sons; second, Scottish Belle 4th, Shaver & Deuker; third, Hero Maid 2nd, A. C. Wood & Sons.

Heifer Calf Under One Year—First, Christine, A. C. Wood & Sons; second Hero Maid 3rd, A. C. Wood & Sons; third, Rosalie, Ardmore Stock Company.

Exhibitor's Herd—Shaver & Deuker.

Breeder's Young Herd—A. C. Wood & Sons.

Get of Sire—First, A. C. Wood & Sons.

Produce of Cow—First, A. C. Wood & Sons; second, Shaver & Deuker.

Sweepstakes, Bull any age—Roan Hero, 3613, Shaver & Deuker.

Sweepstakes, Cow any age—Royal Flora, Shaver & Deuker.

HOLSTEIN.

EXHIBITORS.

W. B. Barney & Company, Hampton, Iowa; McKay Bros., Buckingham, Iowa; C. F. Stone, Peabody, Kansas.

AWARDS.

Judge.................................F. H. Scribner, Rosendale, Wis.

Bull Three Years Old or Over—First, Jewell of Home Farm, 24340, W. B. Barney & Co.; second, Ethel Alexander 2nd's Sir Netherland, 26423, C. F. Stone; third, Alcarta Polkadot Corrector, 30624, McKay Bros.

Bull Two Years Old and Under Three—First, Josephine Mechthilde's Sir De Kol, 35086, C. F. Stone.

Bull One Year Old and Under Two—First Captain Wayne, 40453, W. B. Barney & Co.; second, Geneseo Abbekerk Sir Alcarta, 41217, McKay Bros.

Bull Calf Under One Year—First, Lady Truth's Sir Netherland, C. F. Stone; second, Alcarta Sir De Kol, McKay Bros.; third, Josephine Lad De Kol, W. B. Barney & Co.

Cow Three Years Old or Over—First, Maryke 3rd Gerben 4th, 54935, C. F. Stone; second, Parthenea Hengerveld, 46004, W. B. Barney & Co.; third, Wayne's Parthenea, 46358, C. F. Stone.

Heifer Two Years Old and Under Three—First, Princess Pel De Kol, 71141, C. F. Stone; second Dubarry De Kol, 71462, McKay Bros.; third, Owanda Gerben 2nd, 71975, W. B. Barney & Co.

Heifer One Year Old and Under Two—First, Queen Josephine Gerben De Kol, 78621, C. F. Stone; second, Empress Gerben of Home Farm, 79243, W. B. Barney & Co.; third, Leda Inka Alcarta, 79305, McKay Bros.

Heifer Calf Under One Year—First, Josephine Gerben Alexander, C. F. Stone; second, Myrtle De Kol, W. B. Barney & Co.; third Sissy Baker Alexander, C. F. Stone.

Exhibitor's Herd—First, C. F. Stone; second W. B. Barney & Co.; third, McKay Bros.

Breeder's Young Herd—First, W. B. Barney & Co.; second, C. F. Stone; third, McKay Bros.

Get of Sire—First, C. F. Stone; second, W. B. Barney & Co.; third, C. F. Stone.

Produce of Cow—First, C. F. Stone; second, C. F. Stone.

Sweepstakes, Bull any age—Jewel of Home Farm, 24340, W. B. Barney & Co.

Sweepstakes, Cow any age—Maryke 3d Gerben 4th, 54935, C. F. Stone.

JERSEYS.

EXHIBITORS.

Dixon & Deaner, Brandon, Wisconsin; Hunter & Smith, Beatrice, Nebraska; Geo. S. Redhead, Des Moines, Iowa; Mrs. S. B. Thomas, St. Joseph, Missouri.

AWARDS.

Judge.................................F. H. Scribner, Rosendale, Wisconsin

Bull Three Years Old or Over—First, Belmont's Champion Lad, 68479, Hunter & Smith; second, Zelaya's Fancy Lad, 65883, Dixon & Deaner; third, Guenon's Golden Lad, 62168, Geo. S. Redhead.

Bull Two Years and Under Three—First, Victoria's Champion Lad 2nd, 71849, Hunter & Smith.

Bull One Year and Under Two—First, Catillion's Bachelor, 73605, Hunter & Smith; second, Bugler's Golden Lad, Dixon & Deaner; third, Lanseer's Lad, Geo. S. Redhead.

Bull Calf Under One Year—First, Guenon's Champion Lad, 73619, Hunter & Smith; second, Sphinxetta's Golden Lad, Dixon & Deaner; third, Trustee Le Roy, Geo. S. Redhead.

Cow Three Years Old or Over—First, Jersey Dairymaid, Imp., 140946, Hunter & Smith; second, Morey's Golden Lass, 168471, Dixon & Deaner; third, Guenon's Lad Lost Time, 165613, Mrs. S. B. Thomas.

Heifer Two Years Old and Under Three—First, Silver Stella, 182973; second, Beachfield's Francie, 192138, Dixon & Deaner; third, Trustee's Lizette 2nd, 190158, Geo. S. Redhead.

Heifer One Year Old and Under Two—First, Bessie's Golden Lady, 190874, Dixon & Deaner; second, Guenon's Ara Arawanna, 195286, Hunter & Smith; third, Victoria's Golden Fairy, 194605, Hunter & Smith.

Heifer Calf Under One Year Old—First, Guenon's Victoria, Hunter & Smith; second, Silver's Golden Lady, Dixon & Deaner; third, Victoria's Fairy, Hunter & Smith.

Exhibitor's Herd—First, Hunter & Smith; second, Dixon & Deaner.

Breeder's Young Herd—First, Hunter & Smith; second, Dixon & Deaner.

Get of Sire—First, Dixon & Deaner; second, Hunter & Smith.

Produce of Cow—First, Dixon & Deaner; second, Hunter & Smith.

Sweepstakes, Bull, Any Age—Belmont's Champion Lad, 68479, Hunter & Smith.

Sweepstakes, Cow, Any Age—Jersey Dairymaid, Imp., 140946, Hunter & Smith.

TEST OF MILCH COWS.

EXHIBITORS.

Adolph P. Arp, Eldridge, Iowa; W. B. Barney & Company, Hampton, Iowa; Dixon & Deaner, Brandon, Wisconsin; Hunter & Smith, Beatrice, Nebraska; McKay Bros., Buckingham, Iowa; Geo. S. Redhead, Des Moines, Iowa; C. F. Stone, Peabody, Kansas; Mrs. S. B. Thomas, St Joseph, Missouri.

AWARDS.

Judge....................................H. G. Van Pelt, Ames, Iowa

Test of Milch Cows—First, C. F. Stone; second, Trustee's Lizzette, 161562, Geo. S. Redhead; third, W. B. Barney & Co.; fourth, Mrs. S. B. Thomas; fifth, Morey's Golden Lass, 168471, Dixon & Deaner; sixth, McKay Bros.

FAT CATTLE—SHORT-HORNS.

EXHIBITORS.

C. S. Barclay, West Liberty, Iowa; N. A. Lind, Rolfe, Iowa; J. R. Peak & Son, Winchester, Illinois.

AWARDS.

Judge.....................................J. H. Miller, Peru, Indiana

Steer or Spayed Heifer Two Years and Under Three—First, Gauntlet, C. S. Barclay; second, Sunray, J. R. Peak & Son.

Steer or Spayed Heifer One Year and Under Two—First, Brampton Choice, N. A. Lind; second, Charley Gray, J. R. Peak & Son; third, White Star, N. A. Lind.

Steer or Spayed Heifer Under One Year—First, Tom, N. A. Lind; second, John Gun, J. R. Peak & Son.

Sweepstakes—Champion Steer or Spayed Heifer—First, Brampton Choice, N. A. Lind.

Sweepstakes—Champion Group—First, J. R. Peak & Son.

FAT CATTLE—HEREFORDS.

EXHIBITORS.

Cargill & McMillan, La Crosse, Wisconsin; Edmonds, Shade & Co., Kingsley, Iowa; Chas. J. Off, Peoria, Illinois.

AWARDS.

Judge.....................................J. H. Miller, Peru, Ind.

Steer or Spayed Heifer, Two Years and Under Three—First, Roundup, 186699, Cargill & McMillan.

Steer or Spayed Heifer, One Year and Under Two—First, Fair Lad, 1st, 203171, Cargill & McMillan; second, Columbus Duke, 207784, Edmonds, Shade & Co.

Steer or Spayed Heifer Under One Year—First, Fulfiller 6th, 230511, Cargill & McMillan.

Sweepstakes, Champion Steer, or Spayed Heifer—Fair Lad 1st, 203171, Cargill & McMillan.

Sweepstakes, Champion Group—Cargill & McMillan.

FAT CATTLE—ABERDEEN ANGUS.

EXHIBITORS.

A. C. Binnie, Alta, Iowa; W. J. Miller, Newton, Iowa; Chas. J. Off, Peoria, Illinois.

AWARDS.

Judge.....................................W. J. Kennedy, Ames, Iowa

Steer or Spayed Heifer Two Years and Under Three—First, Dutch Lad, 1329, W. J. Miller; second, Exilio, 66568, Chas. J. Off; third, Gold Dust, 1351, Chas. J. Off.

Steer or Spayed Heifer One Year and Under Two—First, Proud Fellow, 1380, Chas. J. Off; second, Metz Prince, 1386, W. J. Miller; third, Highball, 1426, W. J. Miller.

Steer or Spayed Heifer Under One Year—First, Edison, 1446, Chas. J. Off; second, Proud Lad, W. J. Miller.

Sweepstakes, Champion Steer or Spayed Heifer—Dutch Lad, 1329, W. J. Miller.

Sweepstakes, Champion Group—First, Chas. J. Off; second, W. J. Miller.

FAT CATTLE—GALLOWAYS.

EXHIBITORS.

C. S. Hechtner, Princeton, Illinois; C. D. McPherson, Fairfield, Iowa.

AWARDS.

Judge.................................A. H. Thompson, Nashua, Mo.

Steer or Spayed Heifer Two Years and Under Three—First, C. S. Hechtner.

Steer or Spayed Heifer One Year and Under Two—First, C. S. Hechtner.

Sweepstakes, Champion Steer or Spayed Heifer—First, C. S. Hechtner.

Sweepstakes, Champion Group—First, C. S. Hechtner.

FAT CATTLE—GRADE AND CROSS BRED.

EXHIBITORS.

A. C. Binnie, Alta, Iowa; Cargill & McMillan, La Crosse, Wisconsin; Edmonds, Shade & Co., Kingsley, Iowa; B. F. Fantz, Nevada, Iowa; G. W. Lindsey, Red Cloud, Nebraska; N. A. Lind, Rolfe, Iowa; W. J. Miller, Newton, Iowa; J. W. Moorhead, Monteith, Iowa; Chas. J. Off, Peoria, Illinois; J. R. Peak & Son, Winchester, Illinois; S. S. Spangler, Milan, Missouri.

AWARDS.

Judge.....................................W. J. Kennedy, Ames, Iowa

Steer or Spayed Heifer Two Years and Under Three—First, Wild Tom, W. J. Miller; second, Buster Brown, J. R. Peak & Son; third, Wabash, W. J. Miller.

Steer or Spayed Heifer One Year and Under Two—First, W. J. Miller; second, Red Prince, N. A. Lind; third, Hy Roler, J. R. Peak & Son;

Steer or Spayed Heifer Under One Year—First, Penrose, W. J. Miller; second Roan Vidtor, W. J. Miller; third, Red Lad, J. R. Peak & Son.

Sweepstakes, Champion Steer or Spayed Heifer—First, Black Prince, W. J. Miller.

Sweepstakes, Champion Group—First, W. J. Miller, second, J. R. Peak & Son; third, W. J. Miller.

GRAND CHAMPION.

Steer or spayed heifer, any age or breed, limited to the sweepstakes or champion steers or spayed heifers winning in the pure-bred Short-Horn, Hereford, Aberdeen Angus, Galloways and the grade and cross-bred sections.

Awarded to W. J. Miller, on Dutch Lad, 1329.

GRAND CHAMPION GROUP.

Three steers or spayed heifers, consisting of one steer or spayed heifer, two years and under three, one one year and under two, and one under one year, owned by one exhibitor, competition limited to the champion group of the Short-Horn, Hereford, Aberdeen Angus, Galloway and grade or cross-bred sections.

Awarded to Cargill & McMillan.

SWINE DEPARTMENT.

Superintendent.................R. S. Johnston, Columbus Junction, Iowa

POLAND CHINA.

EXHIBITORS.

S. Alphonso, Sigourney, Iowa; Arbuckle & Wellington, Hope, Indiana; Chas. Ash, Union, Iowa; W. S. Babcock, Rockwell City, Iowa; M. W. Bateman, Monroe, Iowa; A. M. Bellows, Newell, Iowa; E. N. Bergren, Stanton, Iowa; F. P. Bishop, Whitewater, Wisconsin; J. W. Blackford, Hillsboro, Iowa; H. G. Boyer, Lovilia, Iowa; Buck Bros., Guthrie, Oklahoma; F. L. Bunton, West Union, Iowa; C. S. and E. O. Buck, Oxford, Iowa; James J. Burrier, Eddyville, Iowa; F. L. Brumback, Cissna Park, Illinois; S. P. Chiles, Fairfield, Iowa; Wm. Crownover, Hudson, Iowa; D. B. Davenport, Avon, Iowa; J. I. Davis, Mount Hammill, Iowa; Fred L. Downs, Webster City, Iowa; M. A. Dowling, Newton, Iowa; Frank Douglass, Rockwell City, Iowa; A. W. DeWitt, Russell, Iowa; J. H. Fawcett, Woodstock, Illinois; J. S. Fawcett & Son, Springdale, Iowa; R. H. Fichtenmueller, Farmington, Iowa; John Francis & Son, New Lennox, Illinois; J. M. Frey & Son, Wadena, Iowa; Gates & Hunt, Ravenwood, Missouri; Jno. H. Gibbens North English, Iowa; J. A. Goltry, Russell, Iowa; B. L. Gosick, Fairfield, Iowa; G. R. Hall, Iowa City, Iowa; Hanson, Black & Gaffey, Holbrook, Iowa; H. J. Hemmerling, Dike, Iowa; J. C. Hoag, Manson, Iowa; A. W. Holland, New London, Iowa; M. Hummel, Monroe, Iowa; L. Hunsberger, Elgin, Illinois; B. F. Ishmael, Laredo, Wisconsin; James Janson, Newell, Iowa; Harvey Johnson, Logan, Iowa; Ellis Jones, Remington, Iowa; H. B. Jones, Wapello, Iowa; W. A. Jones, Van Meter, Iowa; C. L. Karr, Webster City, Iowa; C. F. Keeling, Avon, Iowa; F. D. Kenworthy, Avon, Iowa; O. S. Kinmouth, Russell, Iowa; Wm. Kirk, Logan, Iowa; James F.

Leahy, Parnell, Iowa; Wm. Lentz, Ankeny, Iowa; Locks & Wellington, Remington, Indiana; F. H. Long, Manning, Iowa; W. C. Lookingbill, Sac City, Iowa; A. J. Lytle & Sons, Oskaloosa, Iowa; G. F. Marshall, Monroe, Iowa; J. A. Mason, Carlisle, Iowa; Brown, Cromwell, Iowa; S. H. Moore, Monroe, Iowa; J. J. Moore, Manson, Iowa; D. S. Needham, Woodward, Iowa; F. N. Orr, Albia, Iowa; John M. Pease, Colfax, Iowa; Wm. Pedrick & Son, Ottumwa, Iowa; G. A. Perry, Knoxville, Iowa; A. J. Podendorf, Logan, Iowa; Preston, Fawcett & Son, Springdale, Iowa; John S. Price, Muscatine, Iowa; Probert Bros., Wadena, Iowa; C. L. Prouty, Council Bluffs, Iowa; O. H. Reed, Bouton, Iowa; Geo. M. Reynolds, Utica, Illinois; Richard, Rill & Cooper, Ferris, Illinois; Schneider Bros., Dana, Iowa; Al Schwaller, Burlington, Iowa; E. A. Seaba, Sigourney, Iowa; Segrist & Stout, Humboldt, Nebraska; L. D. Shaffer & Son, Fayette, Iowa; B. F. Shannon & Book Bros., Storm Lake, Iowa; Mark I. Shaw, Monroe, Iowa; G. A. Singleton, West Liberty, Iowa; Harry Stevenson, Knoxville, Iowa; Chas. H. Stone, Muscatine, Iowa; Strater Bros., Monroe, Iowa; Chas. Stuart, Altoona, Iowa; W. Z. Swallow & Son, Waukee, Iowa; Dr. R. W. Thomas, St. Joseph, Missouri; R. G. Tweed, Le Grande, Iowa; M. M. Unterkircher, Wever, Iowa; J. H. Watson, Madrid, Iowa; West & Lingenfelter, Altoona, Iowa; G. H. White, Emerson, Iowa; Wm. Wingate, Trenton, Missouri; Frank Wolgamuth, Elgin, Illinois; Wm. Wyan, Knoxville, Iowa; Young & Duncan, Madison, Nebraska.

AWARDS.

Judge.................................E. Klever, Bloomingsburg, Ohio

Boar Two Years Old or Over—First, Dr. R. W. Thomas; second, W. A. Jones; third, Harvey Johnson, fourth, F. L. Bunton; fifth, Locke & Wellington; sixth, F. D. Kenworthy; seventh, H. J. Hemmerling.

Boar Eighteen Months and Under Two Years—First, F. L. Brumback; second, Wm. Wingate; third, B. F. Ishmael; fourth, G. H. White; fifth, F. P. Bishop; sixth, Gates & Hunt; seventh, Moon & Brown.

Boar One Year and Under Eighteen Months—First, Frank Wolgamuth; second, Locke & Wellington; third, G. H. White; fourth, A. W. Holland; fifth, Harvey Johnson; sixth, W. C. Lookingbill; seventh, G. A. Singleton.

Boar Six Months and Under One Year—First, S. P. Chiles; second, Al Schwaller; third, Hanson, Black & Gaffey; fourth, Geo. M. Reynolds; fifth, Locke & Wellington; sixth, Al Schwaller; seventh, S. P. Chiles.

Boar Under Six Months—First, Arbuckle & Wellington; second, A. J. Podendorf; third, Al Schwaller; fourth, G. H. White; fifth, Chas. H. Stone; sixth, J. J. Moore; seventh, B. F. Ishmael.

Sow Two Years or Over—First, John Francis & Son; second, W. C. Lookingbill; third, W. Z. Swallow & Son; fourth, W. A. Jones; fifth, Wm. Kirk; sixth, H. J. Hemmerling; seventh, Harvey Johnson.

Sow Eighteen Months and Under Two Years—First, H. G. Boyer; second, John Francis & Son; third, W. Z. Swallow & Son; fourth, Locke & Wellington; fifth, G. H. White; sixth, A. J. Podendorf; seventh, Young & Duncan.

Sow One Year and Under Eighteen Months—First, W. Z. Swallow & Son; second, Frank Wolgamuth; third and fourth, John Francis & Son; fifth, Frank Wolgamuth; sixth, Harvey Johnson; seventh, H. J. Hemmerling.

Sow Six Months and Under One Year—First, Locke & Wellington; second, Frank Wolgamuth; third and fourth, S. P. Chiles; fifth, Gates & Hunt; sixth, G. H. White; seventh, Frank Wolgamuth.

Sow Under Six Months—First, Arbuckle & Wellington; second and third, Locke & Wellington; fourth, Al Schwaller; fifth, Locke & Wellington; sixth, Al Schwaller; seventh, Arbuckle & Wellington.

Boar and Three Sows Over One Year—First, Locke & Wellington; second, John Francis & Son; third, Frank Wolgamuth; fourth, Harvey Johnson; fifth, W. Z. Swallow & Son; sixth, B. F. Shannon & Book Bros.; secenth, H. J. Hemmerling.

Boar and Three Sows Under One Year—First, S. P. Chiles; second, Locke & Wellington; third, Al Schwaller; fourth, John Francis & Son; fifth, W. A. Jones; sixth, S. P. Chiles; seventh, Hanson, Black & Gaffey.

Boar and Three Sows Over One Year, Bred by Exhibitor—First, John Francis & Son; second, Frank Wolgamuth; third, Locke & Wellington; fourth, Harvey Johnson; fifth, B. F. Shannon & Book Bros.; sixth, Gates & Hunt; seventh, A. J. Podendorf.

Boar and Three Sows Under One Year, Bred by Exhibitor—First, S. P. Chiles; second, Locke & Wellington; third, Al Schwaller; fourth, John Francis & Son; fifth, W. A. Jones; sixth, S. P. Chiles; seventh, Hanson, Black & Gaffey.

Get of Sire—First, S. P. Chiles; second, John Francis & Son; third, Arbuckle & Wellington; fourth, Locke & Wellington; fifth, Al Schwaller; sixth, Frank Wolgamuth; seventh, S. P. Chiles.

Produce of Sow—First, Locke & Wellington; second, A. Schwaller; third, W. Z. Swallow & Son; fourth, J. C. Hoag; fifth, W. Z. Swallow & Son; sixth, H. G. Boyer; seventh, Dr. R. W. Thomas.

Sweepstakes, Boar Any Age—S. P. Chiles.

Sweepstakes, Sow Any Age—John Francis & Son.

Sweepstakes, Boar Any Age, Bred by Exhibitor—S. P. Chiles.

Sweepstakes, Sow Any Age, Bred by Exhibitor—John Francis & Son.

BERKSHIRE.

EXHIBITORS.

W. D. Becker, Fort Atkinson, Wisconsin; Etzler & Moses, Decatur, Indiana; R. H. Fichtenmueller, Farmington, Iowa; S. P. Freed, Ames, Iowa; J. M. Frey & Son, Wadena, Iowa; B. L. Gosick, Fairfield, Iowa; Harris & McMahan, Lamine, Missouri; Houghton & Braman, Marshalltown, Iowa; C. D. Johnson, Nashua, Iowa; W. O. Kapp, Guthrie Center, Iowa; Miller & Dietrich, Menlo, Iowa; J. M. McPherson & Son, Stuart, Iowa.

AWARDS.

Judge....................................W. E. Spicer, Bushnell, Ill.

Boar Two Years or Over—First, W. D. Becker; second and third, Houghton & Braman.

Boar Eighteen Months and Under Two Years—First, Harris & McMahan; second, W. D. Becker.

Boar One Year and Under Eighteen Months—First, Harris & McMahan; second, C. D. Johnson; third, J. M. McPherson & Son; fourth, Miller & Dietrich; fifth, Houghton & Braman.

Boar Six Months and Under One Year—First, Harris & McMahan; second, C. D. Johnson; third, Etzler & Moses; fourth, Harris & McMahan; fifth, C. D. Johnson.

Boar Under Six Months—First, Etzler & Moses; second, Miller & Dietrich; third, Etzler & Moses; fourth, Etzler & Moses; fifth, Miller & Dietrich.

Sow Two Years or Over—First, Etzler & Moses; second, C. D. Johnson; third, Houghton & Braman; fourth, W. D. Becker; fifth, Harris & McMahan.

Sow Eighteen Months and Under Two Years—First, C. D. Johnson; second, Etzler & Moses; third, W. D. Becker.

Sow One Year and Under Eighteen Months—First, Harris & McMahan; second, C. D. Johnson; third, C. D. Johnson; fourth, Etzler & Moses; fifth, Harris & McMahan.

Sow Six Months and Under One Year—First, Harris & McMahan; second, J. M. McPherson & Son; third, C. D. Johnson; fourth and fifth, Harris & McMahan.

Sow Under Six Months—First and second, Etzler & Moses; third, Miller & Dietrich; fourth and fifth, Etzler & Moses.

Boar and Three Sows Under One Year—First, Harris & McMahan; second, C. D. Johnson; third, Etzler & Moses; fourth, W. D. Becker.

Boar and Three Sows Under One Year—First, Harris & McMahan; second, Etzler & Moses; third, C. D. Johnson; fourth, Etzler & Moses; fifth, Miller & Dietrich.

Boar and Three Sows Over One Year, Bred by Exhibitor—First, Harris & McMahan; second, Etzler & Moses; third, W. D. Becker.

Boar and Three Sows Under One Year, Bred by Exhibitor—First, Harris & McMahan; second, Etzler & Moses; third, C. D. Johnson; fourth, Etzler & Moses; fifth, Miller & Dietrich.

Get of Sire—First and second, Harris & McMahan; third, Etzler & Moses; fourth, C. D. Johnson; fifth, Miller & Dietrich.

Produce of Sow—First and second, Etzler & Moses; third, Miller & Dietrich; fourth, Houghton & Braman.

Sweepstakes, Boar Any Age—Harris & McMahan.

Sweepstakes, Sow Any Age—Harris & McMahan.

Sweepstakes, Boar Any Age, Bred by Exhibitor—Harris & McMahan.

Sweepstakes, Sow Any Age, Bred by Exhibitor—Harris & McMahan.

CHESTER WHITE.

EXHIBITORS.

Allen Bros., Russell, Iowa; J. L. Barber, Harlan, Iowa; C. C. Beeler & Son, Liberty, Indiana; B. M. Boyer, Farmington, Iowa; E. J. Brouhard, Colo, Iowa; G. T. Clark, Pella, Iowa; A. D. Crossley, Jewell Junction, Iowa; B. M. Eastburn & Son, Hillsborough, Iowa; E. W. Harmon, Rhodes, Iowa; W. F. Hemmerling, Dike, Iowa; J. W. Hollowell, Fairfield, Iowa; Humbert & White, Nashua, Iowa; A. J. Johnson, Brighton, Iowa; P. D. Lake, Moscow, Iowa; Geo. H. Lawshe, Harlan, Iowa; E. L. Leavens, Shell Rock, Iowa; J. H. Mahannah, North English, Iowa; Will Michael, Salem, Iowa; E. L. Nagle & Son, Deep River, Iowa; N. A. Ranck, Niota, Illinois; L. C. Reese, Prescott, Iowa; Wm. Whitted, Monroe, Iowa.

AWARDS.

Judge.................................W. Z. Swallow, Waukee, Iowa

Boar Two Years or Over—First, L. C. Reese; second and third, C. C. Beeler & Son; fourth, E. L. Leavens; fifth, Geo. H. Lawshe; sixth, Humbert & White; seventh, Will Michael.

Boar Eighteen Months and Under Two Years—First, Humbert & White; second, W. F. Hemmerling; third, P. B. Lake.

Boar One Year and Under Eighteen Months—First, Humbert & White; second, J. W. Hollowell; third, E. J. Brouhard; fourth, C. C. Beeler & Son; fifth, L. C. Reese; sixth, E. L. Nagle & Son; seventh, Will Michael.

Boar Six Months and Under One Year—First, Humbert & White; second, L. C. Reese; third, E. L. Nagle & Son; fourth, Geo. H. Lawshe; fifth, P. B. Lake; sixth, Humbert & White; seventh, E. L. Nagle & Son.

Boar Under Six Months—First, J. H. Mahannah; second, Humbert & White; third, E. L. Leavens; fourth, A. J. Johnson; fifth, Humbert & White; sixth, P. B. Lake; seventh, E. J. Brouhard.

Sow Two Years or Over—First, Humbert & White; second, J. L. Barber; third, E. J. Brouhard; fourth, Humbert & White; fifth, L. C. Reese; sixth, C. C. Beeler & Son; seventh, Geo. H. Lawshe.

Sow Eighteen Months and Under Two Years—First, Humbert & White; second, C. C. Beeler & Son; third, E. J. Brouhard; fourth, C. C. Beeler & Son; fifth, L. C. Reese; sixth, C. C. Beeler & Son.

Sow One Year and Under Eighteen Months—First, L. C. Reese; second and third, Humbert & White; fourth, E. J. Brouhard; fifth, W. F. Hemmerling; sixth, J. H. Mahannah; seventh, J. L. Barber.

Sow Six Months and Under One Year—First, Humbert & White; second, J. L. Barber; third, P. B. Lake; fourth, L. C. Reese; fifth, E. J Brouhard; sixth, C. C. Beeler & Son; seventh, Geo. H. Lawshe.

Sow Under Six Months—First, J. H. Mahannah; second and third, Humbert & White; fourth, N. A. Ranck; fifth, Wm. Whitted; sixth, E. J. Brouhard; seventh, E. J. Brouhard.

Boar and Three Sows Over One Year—First, L. C. Reese; second, Humbert & White; third, C. C. Beeler & Son; fourth, Humbert & White; fifth, J. H. Mahannah; sixth, E. J. Brouhard; seventh, Geo. H. Lawshe.

Boar and Three Sows Under One Year—First, J. H. Mahannah; second, Humbert & White; third, L. C. Reese; fourth, P. B. Lake; fifth, E. L. Nagle & Son; sixth, E. L. Leavens; seventh, A. J. Johnson.

Boar and Three Sows Over One Year, Bred by Exhibitor—First and second, Humbert & White; third, E. J. Brouhard; fourth, J. H. Mahannah; fifth, L. C. Reese.

Boar and Three Sows Under One Year, Bred by Exhibitor—First, Humbert & White; second, J. H. Mahannah; third, L. C. Reese; fourth, P. B. Lake; fifth, E. L. Nagle; sixth, E. L. Leavens; seventh, A. J. Johnson.

Get of Sire—First, Humbert & White; second, J. H. Mahannah; third, L. C. Reese; fourth, Humbert & White; fifth, E. J. Brouhard; sixth, Will Michael; seventh, E. L. Nagle & Son.

Produce of Sow—First, J. H. Mahannah; second, Humbert & White; third, E. J. Brouhard; fourth, Wm. Whitted; fifth, A. J. Johnson; sixth, Allen Bros.; seventh, E. L. Leavens.

Sweepstakes, Boar Any Age—L. C. Reese.

Sweepstakes, Sow Any Age—Humbert & White.

Sweepstakes, Boar Any Age, Bred by Exhibitor—Humbert & White.

Sweepstakes, Sow Any Age, Bred by Exhibitor—Humbert & White.

DUROC JERSEY.

EXHIBITORS.

H. S. Allen, Russell, Iowa; A. P. Alsin, Boone, Iowa; E. and C. V. Beaver, Anita, Iowa; W. R. Bennethun, Madrid, Iowa; W. A. Bennethun, Madrid, Iowa; A. L. Bergsten, Mount Union, Iowa; E. J. Brown, Osceola, Iowa; E. J. Campton, Newell, Iowa; M. C. Cramer, Monroe, Iowa; D. B. Davenport, Avon, Iowa; M. D. Davidson, Manson, Iowa; H. W. Davidson, Brooklyn, Iowa; Easton Bros., Galva, Iowa; Edmonds, Shade & Company, Kingsley, Iowa; Sherman Edwards, Bondurant, Iowa; M. M. Elmendorf, Lacona, Iowa; W. S. Elliott, West Liberty, Iowa; F. Fowler & Son, Menlo, Iowa; S. P. Freed, Ames, Iowa; F. E. Garrett, Lohrville, Iowa; Z. I. Grout, Tingley, Iowa; Hanson Bros., Dean, Iowa; R. J. Harding, Macedonia, Iowa; John Henderson, Panora, Iowa; E. E. Henderson, Central City, Iowa; F. H. Herring, Iowa City, Iowa; Dwight Hills, Cedar Falls, Iowa; G. W. Hoffman, Sigourney, Iowa; Ira Jackson, West Milton, Ohio; Johnston Bros. & Newkirk, Brooklyn, Iowa; John Justice, Ankeny, Iowa; W. D. Kail, Carlisle, Iowa; W. A. Kirkpatrick, Lincoln, Nebraska; Geo. Kopf, Farrar, Iowa; Frank Lister, Creston, Iowa; A. L. Lynch, Mount Ayr, Iowa; Geo. Manifold, Shannon City, Iowa; Manley & Company, Lyons, Nebraska; May & Porter, Remington, Indiana; C. A. McCune, Menlo, Iowa; E. D. Michael, Selma, Iowa; O. E. Mickey, Osceola, Nebraska; Geo. H. Miller, Chariton, Iowa; C. R. Mills, Central City, Iowa; S. H. Moore, Monroe, Iowa; John M. Morrison & Son, College View, Nebraska; Nash, Kimmons & McMurray, Pickering, Missouri; D. Nauman, West Liberty, Iowa; H. C. Nichols, West Liberty, Iowa; O. E. Osborn, Weston, Iowa; Otis & Clayton, Orient, Iowa; A. J. Pinck and J. M. Pease, Colfax, Iowa; D. J. Pollock, Thayer, Iowa; A. E. Poush, Chariton, Iowa; W. J. Prather, Russell, Iowa; W. A. Rankin, Carson, Iowa; J. O. Reece, Eldora, Iowa; J. W.

Reynolds & Son, Defiance, Iowa; Richard, Rill & Cooper, Ferris, Illinois; W. H. Rodenbaugh, Macedonia, Iowa; E. Z. Russell, Blair, Nebraska; H. A. Sexsmith, Greenfield, Iowa; H. A. Sherwood, Hartwick, Iowa; F. M. Smith, Panama, Iowa; G. W. Stout, Rose Hill, Iowa; W. F. Stout, Delta, Iowa; F. A. Strong, Orient, Iowa; A. T. Sundell, Paton, Iowa; Watson Bros., Creston, Iowa; J. E. Wehr, Portsmouth, Iowa; Roy West, Bondurant, Iowa; W. L. Willey, Menlo, Iowa; C. A. Wright, Rosendale, Missouri; Jno. Wrighton, Audubon, Iowa; Chas. Van Patten, Sutton, Nebraska; Gilbert Van Patten, Sutton, Nebraska; August N. Voge, Portsmouth, Iowa.

AWARDS.

Judge.....................................L. H. Roberts, Paton, Iowa

Boar Two Years or Over—First, Johnston Bros. & Newkirk; second, Manley & Co.; third, E. Z. Russell; fourth, Ira Jackson; fifth, J. O. Reece; sixth, S. P. Freed; seventh, C. A. McCune.

Boar Eighteen Months and Under Two Years—First, Easton Bros.; second, H. A. Sexsmith; third, A. P. Alsin; fourth, Manley & Co.; fifth Edmonds, Shade & Co.; sixth, May & Porter; seventh, H. S. Allen.

Boar One Year and Under Eighteen Months—First, H. S. Allen; second, W. J. Prather; third, August N. Voge; fourth, E. Z. Russell; fifth, E. E. Henderson; sixth, Ira Jackson; seventh, O. E. Osborn.

Boar Six Months and Under One Year—First, Ira Jackson; second and third, Johnston Bros. & Newkirk; fourth, J. O. Wehr; fifth, Johnston Bros. & Newkirk; sixth, Chas. Van Patten; seventh, F. H. Herring.

Boar Under Six Months—First, Johnston Bros. & Newkirk; second, Gilbert Van Patten; third, G. W. Stout; fourth, Johnston Bros. & Newkirk; fifth, W. L. Willey; sixth, F. A. Strong; seventh, C. A. Wright.

Sow Two Years or Over—First, Edmonds, Shade & Company; second, E. J. Compton; third, Geo. Manifold; fourth, Ira Jackson; fifth, Manly & Company; sixth, O. E. Osborn; seventh, Johnston Bros. & Newkirk.

Sow Eighteen Months and Under Two Years—First, Ira Jackson; second, Johnston Bros. & Newkirk; third, Ira Jackson; fourth, Johnston Bros. & Newkirk; sixth, Johnston Bros. & Newkirk; seventh, Easton Bros.

Sow One Year and Under Eighteen Months—First, F. E. Garrett; second, Edmonds, Shade & Company; third, Ira Jackson; fourth, Johnston Bros. & Newkirk; fifth, Gilbert Van Patten; sixth, Gilbert Van Patten; seventh, Easton Bros.

Sow Six Months and Under One Year—First, Ira Jackson; second, Johnston Bros. & Newkirk; third, F. H. Herring; fourth, Edmonds, Shade & Company; fifth, Johnston Bros & Newkirk; sixth, E. Z. Russell; seventh, J. M. Morrison & Son.

Sow Under Six Months—First, Jno. Wrighton; second, Gilbert Van Patten; third, Johnston Bros. & Newkirk; fourth, W. L. Willey; fifth, Chas. Van Patten; sixth, Manley & Company; seventh, O. E. Osborn.

Boar and Three Sows Over One Year—First, Johnston Bros. & Newkirk; second, Manley & Company; third, Ira Jackson; fourth, E. Z. Russell; fifth, Easton Bros.; sixth, Gilbert Van Patten.

Boar and Three Sows, Under One Year—First, Ira Jackson; second, Johnston Bros. & Newkirk; third, W. S. Elliott; fourth, Gilbert Van Patten; fifth, D. J. Pollock; sixth, Manley & Company; seventh, Chas. Van Patten.

Boar and Three Sows, Over One Year, Bred by Exhibitor—First, Johnston Bros. & Newkirk; second, Ira Jackson; third, E. Z. Russell; fourth, Manley & Company; fifth, Gilbert Van Patten.

Boar and Three Sows, Under One Year, Bred by Exhibitor—First, Ira Jackson; second, Johnston Bros. & Newkirk; third, W. S. Elliott; fourth, Gilbert Van Patten; fifth, D. J. Pollock; sixth, Manley & Company; seventh, C. A. Wright.

Get of Sire—First and second, Ira Jackson; third, Gilbert Van Patten; fourth, Johnston Bros. & Newkirk; fifth, Edmonds, Shade & Company; sixth, Johnston Bros. & Newkirk; seventh, Chas. Van Patten.

Produce of Sow—First, Johnston Bros. & Newkirk; second, John Wrighton; third, G. W. Stout; fourth, Geo. Manifold; fifth, O. E. Osborn; sixth, M. M. Elmdorf; seventh, C. A. Wright.

Sweepstakes, Boar any age—H. S. Allen.

Sweepstakes, Sow any age—Edmonds, Shade & Company.

Sweepstakes, Boar any age, Bred by Exhibitor—Johnston Bros. & Newkirk.

Sweepstakes, Sow any age, Bred by Exhibitor—Edmonds, Shade & Company.

LARGE YORKSHIRES.

EXHIBITORS.

Thos. H. Canfield, Lake Park, Minnesota; B. F. Davidson, Menlo, Iowa.

AWARDS.

Judge............................Thos. Shaw, St. Anthony Park, Minn.

Boar Two Years Old or Over—First, Thos. H. Canfield; second, B. F. Davidson.

Boar One Year Old and Under Eighteen Months—First, Thos. H. Canfield; second, B. F. Davidson.

Boar Six Months and Under One Year—First, Thos. H. Canfield, second, B. F. Davidson.

Boar Under Six Months—First, Thos. H. Canfield; second, B. F. Davidson; third, B. F. Davidson; fourth and fifth, Thos. H. Canfield.

Sow Two Years Old and Over—First and second, Thos. H. Canfield.

Sow Eighteen Months and Under Two Years—First, B. F. Davidson.

Sow One Year and Under Eighteen Months—First and second, Thos. H. Canfield; third and fourth, B. F. Davidson.

Sow Six Months and Under One Year—First and second, Thos. H. Canfield; third and fourth, B. F. Davidson; fifth, Thos. H. Canfield.

Sow Under Six Months—First, B. F. Davidson; second, third, fourth and fifth, Thos. H. Canfield.

Boar and Three Sows Over One Year—First, Thos. H. Canfield; second, B. F. Davidson.

Boar and Three Sows Under One Year—First, Thos. H. Canfield; second, B. F. Davidson; third and fourth, Thos. H. Canfield.

Boar and Three Sows Over One Year, Bred by Exhibitor—First, Thos. H. Canfield; second, B. F. Davidson.

Boar and Three Sows Under One Year, Bred by Exhibitor—First, Thos. H. Canfield; second, B. F. Davidson; third and fourth, Thos. H. Canfield.

Get of Sire—First and second, Thos. H. Canfield; third and fourth, B. F. Davidson; fifth, Thos. H. Canfield.

Produce of Sow—First, B. F. Davidson; second and third, Thos. H. Canfield.

Sweepstakes, Boar any age—Thos. H. Canfield.

Sweepstakes, Sow any age—Thos. H. Canfield.

Sweepstakes, Boar any age, Bred by Exhibitor—Thos. H. Canfield.

Sweepstakes, Sow any age, Bred by Exhibitor—Thos. H. Canfield.

TAMWORTHS.

EXHIBITORS.

J. W. Blackford, Hillsboro, Iowa; C. C. Roup, Iowa City, Iowa; Frank Thornber, Carthage, Illinois.

AWARDS.

Judge............................Thos. Shaw, St. Anthony Park, Minn.

Boar Two Years Old or Over—First, Frank Thornber; second, C. C. Roup.

Boar Eighteen Months and Under Two Years—First, Frank Thornber.

Boar Six Months and Under One Year—First, second and third, Frank Thornber; fourth, C. C. Roup.

Boar Under Six Months—First and second, C. C. Roup; third and fourth, Frank Thornber.

Sow Two Years Old or Over—First, C. C. Roup; second and third, Frank Thornber.

Sow Eighteen Months and Under Two Years—First, Frank Thornber.

Sow One Year and Under Eighteen Months—First, C. C. Roup; second, Frank Thornber.

Sow Six Months and Under One Year—First and second, Frank Thornber.

Sow Under Six Months—First and second, C. C. Roup; third, Frank Thornber.

Boar and Three Sows Over One Year—First, Frank Thornber.

Boar and Three Sows Under One Year—First, Frank Thornber.

Boar and Three Sows Over One Year, Bred by Exhibitor—First, Frank Thornber.

Boar and Three Sows Under One Year, Bred by Exhibitor—First, Frank Thornber; second, C. C. Roup.

Get of Sire—First, C. C. Roup; second, Frank Thornber.
Produce of Sow—First, Frank Thornber.
Sweepstakes, Boar Any Age—Frank Thornber.
Sweepstakes, Sow Any Age—C. C. Roup.
Sweepstakes, Boar Any Age, Bred by Exhibitor—C. C. Roup.
Sweepstakes, Boar Any Age, Bred by Exhibitor—C. C. Roup.

SHEEP DEPARTMENT.

Superintendent............................H. L. Pike, Whiting, Iowa

MERINOS, AMERICAN, SPANISH OR DELAINE.

EXHIBITORS.

W. S. Dixon, Brandon, Wisconsin; A. E. Green, Orchard Lake, Michigan; E. M. Moore, Orchard Lake, Michigan.

AWARDS.

Judge...M. L. Wheeler

Ram Two Years Old or Over—First, E. M. Moore; second, W. S. Dixon; third, E. M. Moore.

Ram One Year Old and Under Two—First, W. S. Dixon; second, A. E. Green; third, W. S. Dixon.

Ram Lamb—First, E. M. Moore; second, A. E. Green; third, E. M. Moore.

Ewe Two Years or Over—First, A. E. Green; second and third, W. D. Dixon.

Ewe Two Years or Over—First, A. E. Green; second and third, W. D. Dixon; third, A. E. Green.

Ewe Lamb—First, A. E. Green; second, E. M. Moore; third, A. E. Green.

Get of Sire—First, A. E. Green; second, E. M. Moore.

Sweepstakes, Pure Bred Ram of Any Age—E. M. Moore.

Sweepstakes, Pure Bred Ewe of Any Age—A. E. Green.

RAMBOUILLET.

EXHIBITORS.

W. S. Dixon, Brandon, Wisconsin; F. W. Harding, Waukesha, Wisconsin; E. M. Moore, Orchard Lake, Michigan.

AWARDS.

Judge...M. L. Wheeler

Ram Two Years Old or Over—First, F. W. Harding; second, E. M. Moore; third, W. S. Dixon.

Ram One Year Old and Under Two—First, F. W. Harding; second, E. M. Moore; third, F. W. Harding.

Ram Lamb—First, W. S. Dixon; second and third, E. M. Moore.

Ewe Two Years or Over—First, W. S. Dixon; second, E. M. Moore; third, F. W. Harding.

Ewe One Year Old and Under Two—First, E. M. Moore; second and third, F. W. Harding.

Ewe Lamb—First, W. S. Dixon; second, E. M. Moore; third, W. S. Dixon.

Get of Sire—First, W. S. Dixon; second, E. M. Moore.

Sweepstakes, Pure Bred Ewe of Any Age—F. W. Harding.

Sweepstakes, Pure Bred Ewe of any Age—W. S. Dixon.

COTSWOLDS.

EXHIBITORS.

F. W. Harding, Waukesha, Wisconsin; Lewis Bros., Camp Point, Illinois.

Judge....................................W. R. Weaver, Canton, Ill.

Ram Two Years Old or Over—First, Lewis Bros.; second and third, F. W. Harding.

Ram One Year Old and Under Two—First, F. W. Harding; second, Lewis Bros.; third, F. W. Harding.

Ram Lamb—First, F. W. Harding; second and third, Lewis Bros.

Ewe Two Years Old or Over—First, Frank W. Harding; second and third, Lewis Bros.

Ewe One Year Old and Under Two—First, F. W. Harding; second, Lewis Bros.; third, F. W. Harding.

Ewe Lamb—First, second and third, F. W. Harding.

Get of Sire—First, F. W. Harding; second, Lewis Bros.

Sweepstakes, Pure Bred Ram of Any Age—Lewis Bros.

Sweepstakes, Pure Bred Ewe of Any Age—F. W. Harding.

LINCOLNS.

EXHIBITORS.

Alexander A. Arnold & Sons, Galesville, Wisconsin.

AWARDS.

Judge....................................W. R. Weaver, Canton, Ill.

Ram Two Years Old or Over—First and second, A. A. Arnold & Sons.

Ram One Year Old and Under Two—First and second, A. A. Arnold & Sons.

Ram Lamb—First and second, A. A. Arnold & Sons.

Ewe Two Years Old or Over—First and second, A. A. Arnold & Sons.

Ewe One Year Old and Under Two—First and second, A. A. Arnold & Sons.

Ewe Lamb—First and second, A. A. Arnold & Sons.
Get of Sire—First and second, A. A. Arnold & Sons.
Sweepstakes, Pure Bred Ram of Any Age—A. A. Arnold & Sons.
Sweepstakes, Pure Bred Ewe of Any Age—A. A. Arnold & Sons.

HAMPSHIRE DOWNS.

EXHIBITORS.

Renk Bros., Sun Prairie, Wisconsin.

AWARDS.

Judge....................................W. R. Weaver, Canton, Ill.

Ram One Year Old and Under Two—First and second, Renk Bros.
.*Ram Lamb*—First and second, Renk Bros.
Ewe Two Years Old or Over—First, Renk Bros.
Ewe One Year Old and Under Two—First and second, Renk Bros.
Ewe Lamb—First and second, Renk Bros.
Sweepstakes, Pure Bred Ram of Any Age—Renk Bros
Sweepstakes, Pure Bred Ewe of Any Age—Renk Bros.

SHROPSHIRES.

EXHIBITORS.

Chandler Bros., Kellerton, Iowa; W. S. Dixon, Brandon, Wisconsin; J. S. Fawcett & Son, Springdale, Iowa; F. W. Harding, Waukesha, Wisconsin; Kaufman Bros., Moscow, Iowa; F. P. McAdoo, Indianola, Iowa; Geo. C. McKerrow, Pewaukee, Wisconsin; O. H. Peasley, Indianola, Iowa; Plumly Bros., Springville, Iowa; Renk Bros., Sun Prairie, Wisconsin.

AWARDS.

Judge....................................W. R. Weaver, Canton, Illinois

Ram Two Years Old or Over—First, Geo. C. McKerrow; second and third, Chandler Bros.

Ram One Year Old and Under Two—First, F. W. Harding; second, Geo. C. McKerrow; third, Chandler Bros.

Ram Lamb—First, F. W. Harding; second, Geo. C. McKerrow; third, Renk Bros.

Ewe Two Years Old or Over—First and second, Geo. C. McKerrow; third, W. S. Dixon.

Ewe One Year Old and Under Two—First, F. W. Harding; second and third, Geo. C. McKerrow.

Ewe Lamb—First, Geo. C. McKerrow; second, F. W. Harding; third, Geo. C. McKerrow.

Get of Sire—First, F. P. McAdoo; second, Plumly Bros.

Sweepstakes, Pure Bred Ram of Any Age—F. W. Harding.

Sweepstakes, Pure Bred Ewe of Any Age—F. W. Harding.

IOWA SHROPSHIRES.

EXHIBITORS.

Chandler Bros., Kellerton, Iowa; W. L. Farmer, Indianola, Iowa; J. S. Fawcett & Son, Springdale, Iowa; W. O. Fritchman, Muscatine, Iowa; Kaufman Bros., Moscow, Iowa; F. P. McAdoo, Indianola, Iowa; O. H. Peasley, Indianola, Iowa; Plumly Bros., Springville, Iowa.

AWARDS.

Judge..................................W. R. Weaver, Canton, Illinois

Ram Two Years Old or Over—First, J. S. Fawcett & Son; second and third, F. P. McAdoo; fourth, Plumly Bros.; fifth, F. P. McAdoo.

Ram One Year Old and Under Two—First, Plumly Bros.; second, O. H. Peasley; third and fourth, F. P. McAdoo; fifth, W. L. Farmer; sixth, Kaufman Bros.; seventh, J. S. Fawcett & Son.

Ram Lamb—First, O. H. Peasley; second and third, F. P. McAdoo; fourth, Plumly Bros.; fifth, F. P. McAdoo; sixth, Plumly Bros.; seventh, J. S. Fawcett & Son.

Ewe Two Years Old or Over—First and second, Plumly Bros.; third, F. P. McAdoo; fourth, O. H. Peasley; fifth, W. L. Farmer.

Ewe One Year Old and Under Two—First, Plumly Bros.; second, F. P. McAdoo; third, Plumly Bros.; fourth, J. S. Fawcett & Son; fifth, J. S. Fawcett & Son; sixth, O. H. Peasley.

Ewe Lamb—First, F. P. McAdoo; second and third, Plumly Bros.; fourth and fifth, O. H. Peasley; sixth, Plumly Bros.; seventh, J. S. Fawcett & Son.

Get of Sire—First, Plumly Bros.; second, O. H. Peasley.

Flock—First, Plumly Bros.; second, F. P. McAdoo; third, J. S. Fawcett & Son.

Sweepstakes, Ram Any Age—J. S. Fawcett & Son.

Sweepstakes, Ewe Any Age—Plumly Bros.

SPECIAL PREMIUMS OFFERED BY THE AMERICAN SHROPSHIRE REGISTRY ASSOCIATION.

Ram Two Years Old or Over—First, Geo. C. McKerrow; second, Renk Bros.; third, J. S. Fawcett & Son.

Ram One Year Old and Under Two—First and second, Geo. C. McKerrow; third, Plumly Bros.

Ram Lamb—First, O. H. Peasley; second and third, F. P. McAdoo.

Ewe Two Years Old or Over—First, W. S. Dixon; second, Kaufman Bros.; third, Renk Bros.

Ewe One Year Old and Under Two—First, Plumly Bros.; second, F. P. McAdoo; third, Plumly Bros.

Ewe Lamb—First, F. P. McAdoo; second and third, Plumly Bros.

Sweepstakes, Best Ram Any Age—Geo. C. McKerrow.

Sweepstakes, Best Ewe Any Age—W. S. Dixon.

Get of Sire—First, F. P. McAdoo; second, Plumly Bros.

Flock—First, Plumly Bros.; second, J. S. Fawcett & Son.

OXFORD DOWNS.

EXHIBITORS.

Jno. Graham & Son, Eldora, Iowa; Geo. C. McKerrow, Pewaukee, Wisconsin.

AWARDS.

Judge.................................W. R. Weaver, Canton, Illinois

Ram Two Years Old or Over—First and second, Geo. C. McKerrow; third, John Graham & Son.

Ram One Year Old and Under Two—First, second and third, Geo. C. McKerrow.

Ram Lamb—First and second, Geo. C. McKerrow; third, John Graham & Son.

Ewe Two Years Old or Over—First and second, Geo. C. McKerrow.

Ewe One Year Old and Under Two—First and second, Geo. C. McKerrow.

Ewe Lamb—First and second, Geo. C. McKerrow; third, John Graham & Son.

Get of Sire—First, John Graham & Son.

Sweepstakes, Pure Bred Ram of Any Age—Geo. C. McKerrow.

Sweepstakes, Pure Bred Ewe of Any Age—Geo. C. McKerrow.

IOWA OXFORD DOWNS.

EXHIBITORS.

John Graham & Son, Eldora, Iowa.

AWARDS.

Judge.................................W. R. Weaver, Canton, Illinois

Ram Two Years Old or Over—First, John Graham & Son.

Ram One Year Old and Under Two—First and second, John Graham & Son.

Ram Lamb—First and second, John Graham & Son.

Ewe Lamb—First and second, John Graham & Son.

Get of Sire—First, John Graham & Son.

Sweepstakes, Ram of Any Age—John Graham & Son.

SOUTHDOWNS.

EXHIBITORS.

Geo. C. McKerrow, Pewaukee, Wisconsin; W. S. Dixon, Brandon, Wisconsin.

AWARDS.

Judge.................................W. R. Weaver, Canton, Illinois

Ram Two Years Old or Over—First and second, Geo. C. McKerrow.

Ram One Year Old and Under Two—First and second, Geo. C. McKerrow.

Ram Lamb—First and second, Geo. C. McKerrow.

Ewe Two Years Old or Over—First and second, Geo. C. McKerrow; third, W. S. Dixon.

Ewe One Year Old and Under Two—First and second, Geo. C. McKerrow.

Ewe Lamb—First and second, Geo. C. McKerrow.

Sweepstakes, Pure Bred Ram of Any Age—Geo. C. McKerrow.

Sweepstakes, Pure Bred Ewe of Any Age—Geo. C. McKerrow.

DORSETS.

First premium in each division except "get of sire" awarded to Lewis Bros., Camp Point, Illinois, on Cheviot sheep.

SWEEPSTAKE FLOCKS.

MERINO FLOCKS.

EXHIBITORS.

W. S. Dixon, Brandon, Wisconsin; F. W. Harding, Waukesha, Wisconsin; A. E. Green, Orchard Lake, Michigan; E. M. Moore, Orchard Lake, Michigan.

AWARDS.

Judge.................................W. R. Weaver, Canton, Illinois

Flock of Pure Bred Merinos, Any Age—(Not less than one ram and five ewes)—First, E. M. Moore; second, F. W. Harding; third, W. S. Dixon.

LONG WOOL FLOCKS.

EXHIBITORS.

F. W. Harding, Waukesha, Wisconsin; Alex A. Arnold & Sons, Galesville, Wisconsin; Lewis Bros., Camp Point, Illinois.

AWARDS.

Judge.................................W. R. Weaver, Canton, Illinois

Flock of Pure Bred Long Wool, Any Age—(Not less than one ram and five ewes)—First, F. W. Harding; second, Lewis Bros.; third, A. A. Arnold & Sons.

MIDDLE WOOL FLOCKS. SHROPSHIRES AND SOUTHDOWNS.

EXHIBITORS.

Chandler Bros., Kellerton, Iowa; F. W. Harding, Waukesha, Wisconsin; Geo. C. McKerrow, Pewaukee, Wisconsin; Plumly Bros., Springville, Iowa; Renk Bros., Sun Prairie, Wisconsin.

AWARDS.

Judge.................................W. R. Weaver, Canton, Illinois

Flock of Pure Bred Middle Wool, Any Age—(Not less than one ram and five ewes)—First, Geo. C. McKerrow; second, F. W. Harding; third, Geo. C. McKerrow.

MIDDLE WOOL FLOCKS.

OXFORDS, HAMPSHIRE DOWNS AND DORSETS.

EXHIBITORS.

Geo. C. McKerrow, Pewaukee, Wisconsin; Renk Bros., Sun Prairie, Wisconsin.

AWARDS.

Judge.................................W. R. Weaver, Canton, Illinois

Flock of Pure Bred Middle Wool, Any Age—(Not less than one ram and five ewes)—First and second, Geo. McKerrow; third, Renk Bros.

POULTRY DEPARTMENT.

Superintendent.............................H. L. Pike, Whiting, Iowa
Assistant Superintendent...................H. Shivvers, Knoxville, Iowa

CLASS 55—AMERICANS.

B. P. Rock Cock—First, S. H. Page, Waverly, Iowa; second, E. G. Roberts, Fort Atkinson, Wisconsin.

B. P. Rock Hen—First, S. H. Page, Waverly, Iowa; second, J. R. Hoover & Sons, Oskaloosa, Iowa.

B. P. Rock Cockerel—First, S. H. Page, Waverly, Iowa; second, J. R. Hoover & Sons, Oskaloosa, Iowa.

B. P. Rock Pullet—First, Buck Bros., Guthrie, Oklahoma; second, J. R. Hoover & Sons, Oskaloosa, Iowa.

Buff P. Rock Cock—First, E. G. Roberts, Fort Atkinson, Wisconsin; second, E. G. Roberts, Fort Atkinson, Wisconsin.

Buff P. Rock Hen—First, H. H. Rich, Des Moines, Iowa; second, J. E. Hime, Indianola, Iowa.

Buff P. Rock Cockerel—First, H. H. Rich, Des Moines, Iowa; second, N. A. Lind, Rolfe, Iowa.

Buff P. Rock Pullet—First, N. A. Lind, Rolfe, Iowa; second, H. H. Rich, Des Moines, Iowa.

W. P. Rock Cock—First, Mrs. O. L. Reitveld, Pella, Iowa; second, Buck Bros., Guthrie, Oklahoma.

W. P. Rock Hen—First, E. G. Roberts, Fort Atkinson, Wisconsin; second, Mrs. O. L. Reitveld, Pella, Iowa.

W. P. Rock Cockerel—First, H. H. Rich, Des Moines, Iowa; second, Mrs. O. L. Reitveld, Pella, Iowa.

W. P. Rock Pullet—First, H. H. Rich, Des Moines, Iowa; second, H. H. Rich, Des Moines, Iowa.

Partridge Wyandotte Cock—First, E. G. Roberts, Fort Atkinson, Wisconsin; second, F. F. and V. G. Warner, Bloomfield, Iowa.

Partridge Wyandotte Hen—First, F. F. and V. G. Warner, Bloomfield, Iowa; second, Rev. A. B. Adams, Altoona, Iowa.

Partridge Wyandotte Cockerel—First, F. F. and V. G. Warner, Bloomfield, Iowa; second, Rev. A. B. Adams, Altoona, Iowa.

Partridge Wyandotte Pullet—First, F. F. and V. G. Warner, Bloomfield, Iowa; second, F. F. and V. G. Warner, Bloomfield, Iowa.

S. L. Wyandotte Cock—First, Buck Bros., Guthrie, Oklahoma; second, Walter Perkins, Ames, Iowa.

S. L. Wyandotte Hen—First, Walter Perkins, Ames, Iowa; second, F. F. and V. G. Warner, Bloomfield, Iowa.

S. L. Wyandotte Cockerel—First, P. M. Cretzmeyer, Waverly, Iowa; second, F. F. and V. G. Warner, Bloomfield, Iowa.

S. L. Wyandotte Pullet—First, Walter Perkins, Ames, Iowa; second, F. F. and V. G. Warner, Bloomfield, Iowa.

S. P. Wyandotte Cock—First, E. G. Roberts, Fort Atkinson, Wisconsin.

S. P. Wyandotte Hen—First, E. G. Roberts.

S. P. Wyandotte Cockerel—First, E. G. Roberts.

S. P. Wyandotte Pullet—First, E. G. Roberts.

Golden Wyandotte Cock—First, John Peterson, Indianola, Iowa; second, F. F. and V. G. Warner, Bloomfield, Iowa.

Golden Wyandotte Hen—First, E. G. Roberts, Fort Atkinson, Wisconsin; second, John Peterson, Indianola, Iowa.

Golden Wyandotte Cockerel—First, F. F. and V. G. Warner, Bloomfield, Iowa; second, E. G. Roberts, Fort Atkinson, Wisconsin.

Golden Wyandotte Pullet—First, F. F. and V. G. Warner, Bloomfield, Iowa; second, E. G. Roberts, Fort Atkinson, Wisconsin.

White Wyandotte Cock—First, Geo. L. Marsh, Fort Dodge, Iowa; second, Mrs. N. B. Ashby, Des Moines, Iowa.

White Wyandotte Hen—First, Geo. L. Marsh, Fort Dodge, Iowa; second, Geo. L. Marsh, Fort Dodge, Iowa.

White Wyandotte Cockerel—First, J. H. Boston, McCallsburg, Iowa; second, Buck Bros., Guthrie, Oklahoma.

White Wyandotte Pullet—First, J. H. Boston, McCallsburg, Iowa; second, Mrs. N. B. Ashby, Des Moines, Iowa.

Buff Wyandotte Cock—First, F. F. and V. G. Warner, Bloomfield, Iowa; second, E. G. Roberts, Fort Atkinson, Wisconsin.

Buff Wyandotte Hen—First, Dr. L. D. Carpenter, Indianola, Iowa; second, F. F. and V. G. Warner, Bloomfield, Iowa.

Buff Wyandotte Cockerel—First, F. F. and V. G. Warner, Bloomfield, Iowa; second, F. F. and V. G. Warner, Bloomfield, Iowa.

Buff Wyandotte Pullet—First, Buck Bros., Guthrie, Oklahoma; second, E. G. Roberts, Fort Atkinson, Wisconsin.

Black Java Cock—First, E. G. Roberts, Fort Atkinson, Wisconsin.

Black Java Hen—First, E. G. Roberts.

Black Java Cockerel—First, Buck Bros., Guthrie, Oklahoma; second, E. G. Roberts, Fort Atkinson, Wisconsin.

Black Java Pullet—First, E. G. Roberts, Fort Atkinson, Wisconsin.

Orpington Cock—First, Buck Bros., Guthrie, Oklahoma; second, J. R. Hoover & Son, Oskaloosa, Iowa.

Orpington Hen—First, Buck Bros.; second, J. R. Hoover & Sons.

Orpington Cockerel—First, J. R. Hoover & Sons; second, J. R. Hoover & Sons.

Orpington Pullet—First, J. R. Hoover & Sons; second, J. R. Hoover & Sons.

Rose Comb R. I. Red Cock—First, J. G. Lembke, Griswold, Iowa; second, J. G. Lembke, Griswold, Iowa.

Rose Comb R. R. Red Hen—First, J. G. Lembke; second, J. R. Lembke.

Rose Comb R. I. Red Cockerel—First, J. G. Lembke, Griswold, Iowa; second, J. G. Lembke, Griswold, Iowa.

Rose Comb R. I. Red Pullet—First, J. G. Lembke; second, J. G. Lembke.

Single Comb R. I. Red Cock—First, Bixby & Bixby, Council Bluffs, Iowa; second, E. G. Roberts, Fort Atkinson, Wisconsin.

Single Comb R. I. Red Cockerel—First, Bixby & Bixby; second, E. G. Roberts.

Single Comb R. I. Red Hen—First, Bixby & Bixby; second, E. G. Roberts.

Single Comb R. I. Red Pullet—First, L. Sheldahl, Waverly, Iowa; second, E. G. Roberts.

Silver Grey Dorking Cock—First, Buck Bros., Guthrie, Oklahoma.

Silver Grey Dorking Hen—First, E. G. Roberts; second, Buck Bros.

Silver Grey Dorking Cockerel—First, E. G. Roberts.

Silver Grey Dorking Pullet—First, E. G. Roberts.

CLASS 56—ASIATICS.

Light Brahma Cock—First, E. G. Roberts; second, Buck Bros.

Light Brahma Hen—First, E. G. Roberts; second, Buck Bros.

Light Brahma Cockerel—First, Buck Bros; second, Buck Bros.

Light Brahma Pullet—First, Buck Bros; second, E. G. Roberts.

Dark Brahma Cock—First, Buck Bros.

Dark Brahma Hen—First, Buck Bros.; second, E. G. Roberts.

Dark Brahma Cockerel—First, Buck Bros.; second, Buck Bros.

Dark Brahma Pullet—First, Buck Bros.; second, Buck Bros.

Buff Cochin Cock—First, Dr. L. D. Carpenter, Indianola, Iowa; second, Dr. L. D. Carpenter, Indianola, Iowa.

Buff Cochin Hen—First, Dr. L. D. Carpenter; second, Buck Bros.

Buff Cochin Cockerel—First, Dr. L. D. Carpenter; second, Buck Bros.

Buff Cochin Pullet—First, Dr. L. D. Carpenter; second, Dr. L. D. Carpenter.

Partridge Cochin Cock—First, Miss E. M. Brinckler, Stuart, Iowa; second, Buck Bros.

Partridge Cochin Hen—First, J. E. Hime, Indianola, Iowa; second, Miss E. M. Brinckler.

Partridge Cochin Cockerel—First, Buck Bros.; second, Buck Bros.

Partridge Cochin Pullet—First, Buck Bros.; second, Buck Bros.

Black Langshan Cock—First, R. E. West, Altoona, Iowa; second, J. R. Hoover & Sons, Oskaloosa, Iowa.

Black Langshan Hen—First, W. L. Williams, Williamsburg Iowa; second, Walter Perkins, Ames, Iowa.

Black Langshan Cockerel—First, J. R. Hoover & Sons; second, Buck Bros.

Black Langshan Pullet—First, W. L. Williams, Williamsburg, Iowa; second, E. G. Roberts, Fort Atkinson, Wisconsin.

CLASS 57—MEDITERRANEANS.

S. C. Brown Leghorn Cock—First, E. G. Roberts, Fort Atkinson, Wisconsin; second, Frank Lester, Creston, Iowa.

S. C. Brown Leghorn Hen—First, J. R. Hoover & Sons, Oskaloosa, Iowa; second, E. G. Roberts.

S. C. Brown Leghorn Cockerel—First, A. E. Banta, Wheatland, Iowa; second, F. H. Hunter, Ankeny, Iowa.

S. C. Brown Leghorn Pullet—First, A. E. Banta; second, F. W. Johnson, Luther, Iowa.

R. C. Brown Leghorn Cock—First, J. R. Hoover & Sons; second, E. G. Roberts.

R. C. Brown Leghorn Hen—First, E. G. Roberts; second, Buck Bros.

R. C. Brown Leghorn Cockerel—First, F. H. Hunter, Ankeny, Iowa; second, E. G. Roberts.

R. C. Brown Leghorn Pullet—First, F. H. Hunter, Ankeny, Iowa; second, Wm. O. Coon, Des Moines, Iowa.

S. C. White Leghorn Cock—First, E. G. Roberts; second, Buck Bros.

S. C. White Leghorn Hen—First, E. G. Roberts; second, Walter Perkins, Ames, Iowa.

S. C. White Leghorn Cockerel—First, E. G. Roberts; second, Barker Bros., Indianola, Iowa.

S. C. White Leghorn Pullet—First, Barker Bros.; second, Barker Bros.

R. C. White Leghorn Cock—First, Mrs. S. P. Rogers, Pleasanton, Iowa; second, E. G. Roberts.

R. C. White Leghorn Hen—First, Mrs. S. P. Rogers; second, Mrs. S. P. Rogers.

R. C. White Leghorn Cockerel—First, Mrs. S. P. Rogers; second, E. G. Roberts.

R. C. White Leghorn Pullet—First, Mrs. S. P. Rogers; second, Mrs. S. P. Rogers.

Buff Leghorn Cock—First, E. G. Roberts; second, Buck Bros.

Buff Leghorn Hen—First, E. G. Roberts; second, Buck Bros.

Buff Leghorn Cockerel—First, Buck Bros.; second, E. G. Roberts.

Buff Leghorn Pullet—First, E. G. Roberts; second, E. G. Roberts.

Black Minorca Cock—First, E. G. Roberts; second, Buck Bros.

Black Minorca Hen—First, E. G. Roberts; second, Buck Bros.
Black Minorca Cockerel—First, E. G. Roberts; second, Buck Bros.
Black Minorca Pullet—First, E. G. Roberts; second, Buck Bros.

CLASS 58—POLISH.

W. C. B. Polish Cock—First, E. G. Roberts; second, Buck Bros.
W. C. B. Polish Hen—First, Buck Bros.; second, E. G. Roberts.
W. C. B. Polish Cockerel—First, Buck Bros.; second, Buck Bros.
W. C. B. Polish Pullet—First, Buck Bros.; second, Buck Bros.
Golden Polish B. or P. Cock—First, E. G. Roberts; second, E. G. Roberts.
Golden Polish B. or P. Hen—First, E. G. Roberts; second, E. G. Roberts.
Golden Polish B. or P. Cockerel—First, E. G. Roberts; second, E. G. Roberts.
Golden Polish B. or P. Pullet—First, E. G. Roberts; second, E. G. Roberts.
Silver Polish B. or P. Cock—First, E. G. Roberts; second, E. G. Roberts.
Silver Polish B. or P. Hen—First, E. G. Roberts; second, E. G. Roberts.
Silver Polish B. or P. Cockerel—First, E. G. Roberts; second, E. G. Roberts.
Silver Polish B. or P. Pullet—First, E. G. Roberts; second, E. G. Roberts.
S. S. Hamburg Cock—First, E. G. Roberts; second, Miss L. Cook, Morning Sun, Iowa.
S. S. Hamburg Hen—First, Miss L. Cook; second, Miss L. Cook.
S. S. Hamburg Cockerel—First, Miss L. Cook; second, Miss L. Cook.
S. S. Hamburg Pullet—First, Miss L. Cook; second, Miss L. Cook.
White Hamburg Cock—First, E. G. Roberts.
White Hamburg Hen—First, E. G. Roberts; second, E. G. Roberts.
White Hamburg Cockerel—First, E. G. Roberts; second, E. G. Roberts.
White Hamburg Pullet—First, E. G. Roberts; second, E. G. Roberts.
Black Hamburg Cock—First, E. G. Roberts; second, E. G. Roberts.
Black Hamburg Hen—First, Buck Bros.; second, E. G. Roberts.
Black Hamburg Cockerel—First, E. G. Roberts; second, Buck Bros.
Black Hamburg Pullet—First, E. G. Roberts; second, Buck Bros.

CLASS 60—FRENCH.

Houdan Cock—First, E. G. Roberts; second, Buck Bros.
Houdan Hen—First, E. G. Roberts; second, Buck Bros.
Houdan Cockerel—First, E. G. Roberts; second, E. G. Roberts.
Houdan Pullet—First, E. G. Roberts; second, Buck Bros.

CLASS 61—GAMES.

C. I. Game Cock—First, E. G. Roberts; second, Buck Bros.
C. I. Game Hen—First, E. G. Roberts; second, Buck Bros.
C. I. Game Cockerel—First, Buck Bros.; second, Buck Bros.
C. I. Game Pullet—First, Buck Bros.; second, Buck Bros.
B. B. R. Game Cock—First, Buck Bros.; second, Buck Bros.
B. B. R. Game Hen—First, Buck Bros.; second, Buck Bros.

B. B. R. Game Cockerel—First, Buck Bros.; second, Buck Bros.

B. B. R. Game Pullet—First, Buck Bros.; second, Buck Bros.

Red Pyle Game Hen—First, Buck Bros.; second, Buck Bros.

Red Pyle Game Cockerel—First, Buck Bros.; second, Buck Bros.

Red Pyle Game Pullet—First, Buck Bros.; second, Buck Bros.

S. Duckwing Game Cock—First, Buck Bros.

S. Duckwing Game Hen—First, E. G. Roberts.

S. Duckwing Game Cockerel—First, Buck Bros.

S. Duckwing Game Pullet—First, Buck Bros.

G. Duckwing Game Cock—First, Buck Bros.

G. Duckwing Game Hen—First, E. G. Roberts.

G. Duckwing Game Cockerel—First, Buck Bros.; second, Buck Bros.

G. Duckwing Game Pullet—First, Buck Bros.; second, Buck Bros.

CLASS 62—BANTAMS.

B. B. Red Game Bantam Cock—First, E. G. Roberts; second, Buck Bros.

B. B. Red Game Bantam Hen—First, E. G. Roberts; second, Buck Bros.

B. B. Red Game Bantam Cockerel—First, L. J. Schuster, Des Moines, Iowa; second, L. J. Schuster, Des Moines, Iowa.

B. B. Red Game Bantam Pullet—First, E. G. Roberts; second, L. J. Schuster.

Red Pyle Bantam Cock—First, E. G. Roberts; second, E. G. Roberts.

Red Pyle Bantam Hen—First, E. G. Roberts; second, E. G. Roberts.

Red Pyle Bantam Cockerel—First, E. G. Roberts; second, E. G. Roberts.

Red Pyle Bantam Pullet—First, E. G. Roberts; second, E. G. Roberts.

Silver Duckwing B. Cock—First, E. G. Roberts; second, Buck Bros.

Silver Duckwing B. Hen—First, E. G. Roberts; second, Buck Bros.

Silver Duckwing B. Cockerel—First, Buck Bros.; second, Buck Bros.

Silver Duckwing B. Pullet—First, E. G. Roberts; second, Buck Bros.

Golden Duckwing B. Cock—First, Buck Bros.

Golden Duckwing B. Hen—First, E. G. Roberts; second, Buck Bros.

Golden Duckwing B. Cockerel—First, E. G. Roberts; second, E. G. Roberts.

Golden Duckwing B. Pullet—First, E. G. Roberts; second, Buck Bros.

Golden Seabright B. Cock—First, Buck Bros.; second, Buck Bros.

Golden Seabright B. Hen—First, E. G. Roberts; second, Buck Bros.

Golden Seabright B. Cockerel—First, Dale B. Fagen, Des Moines, Iowa; second, Dale B. Fagen, Des Moines, Iowa.

Golden Seabright B. Pullet—First, Dale B. Fagen; second, Dale B. Fagen.

Silver Seabright B. Cock—First, E. G. Roberts; second, E. G. Roberts.

Silver Seabright B. Hen—First, E. G. Roberts; second, E. G. Roberts.

Silver Seabright B. Cockerel—First, E. G. Roberts; second, E. G. Roberts.

Silver Seabright B. Pullet—First, E. G. Roberts; second, E. G. Roberts.

Buff Cochin Bantam Cock—First, E. G. Roberts; second, Buck Bros.

Buff Cochin Bantam Hen—First, H. H. Rich, Des Moines, Iowa; second, E. G. Roberts.

Buff Cochin Bantam Cockerel—First, E. G. Roberts.

Buff Cochin Bantam Pullet—First, H. H. Rich; second, E. G. Roberts.

B. T. Japanese Cock—First, Buck Bros.

B. T. Japanese Hen—First, E. G. Roberts; second, Buck Bros.

B. T. Japanese Cockerel—First, E. G. Roberts; second, Buck Bros.

B. T. Japanese Pullet—First, E. G. Roberts; second, Buck Bros.

CLASS 63—TURKEYS.

Bronze Gobbler—First, F. F. and V. G. Warner, Bloomfield, Iowa; second, F. F. and V. G. Warner, Bloomfield, Iowa.

Bronze Hen—First, F. F. and V. G. Warner; second, F. F. and V. G. Warner.

Bronze Cockerel—First, F. F. and V. G. Warner; second, Buck Bros.

Bronze Pullet—First, F. F. and V. G. Warner; second, Buck Bros.

White Holland Gobbler—First, Mrs. N. B. Ashby, Des Moines, Iowa; second, Buck Bros.

White Holland Hen—First, Buck Bros.; second, Buck Bros.

White Holland Cockerel—First, Buck Bros.; second, Buck Bros.

White Holland Pullet—First, Buck Bros.; second, Buck Bros.

CLASS 64—GEESE.

Toulouse Gander (Old)—First, E. G. Roberts; second, Buck Bros.

Toulouse Gander (Young)—First, E. G. Roberts; second, Buck Bros.

Toulouse Goose (Old)—First, E. G. Roberts.

Toulouse Goose (Young)—First, E. G. Roberts; second, Buck Bros.

Embden Gander (Old)—First, Buck Bros.

Embden Goose (Old)—First, Buck Bros.

CLASS 65—DUCKS.

Pekin Drake (Old)—First, F. F. and V. G. Warner, Bloomfield, Iowa; second, E. F. Bell, Roland, Iowa.

Pekin Drake (Young)—First, Mrs. Frances C. Errickson, Reinbeck, Iowa; second, E. G. Roberts.

Pekin Duck (Old)—First, F. F. and V. G. Warner; second, Mrs. Frances C. Errickson.

Pekin Duck (Young)—First, Mrs. Frances C. Errickson; second, E. G. Roberts.

Rouen Drake (Old)—First, Buck Bros.; second, E. G. Roberts.

Rouen Drake (Young)—First, E. G. Roberts.

Rouen Duck (Old)—First, E. G. Roberts; second, Buck Bros.

Rouen Duck (Young)—First, E. G. Roberts; second, Buck Bros.

Muscovy Drake (Old)—First, E. G. Roberts; second, Buck Bros.

Muscovy Drake (Young)—First, E. G. Roberts; second, E. G. Roberts.

Muscovy Duck (Old)—First, E. G. Roberts; second, E. G. Roberts.

Muscovy Duck (Young)—First, E. G. Roberts; second, Buck Bros.

CLASS 66—BREEDING PENS.

B. P. Rock Fowls—First, S. H. Page, Waverly, Iowa; second, E. G. Roberts, Fort Atkinson, Wisconsin.

B. P. Rock Chicks—First, S. H. Page; second, Walter Currier, Rose Hill, Iowa.

Buff P. Rock Fowls—First, H. H. Rich, Des Moines, Iowa; second, H. H. Rich.

Buff P. Rock Chicks—First, N. A. Lind, Rolfe, Iowa; second, H. H. Rich.

White P. Rock Fowls—First, Rev. A. B. Adams, Altoona, Iowa; second, Mrs. O. L. Reitveld, Pella, Iowa.

White P. Rock Chicks—First, Buck Bros.; second, Mrs. O. L. Reitveld.

Silver Wyandotte Fowls—First, Walter Perkins, Ames, Iowa; second, F. F. and V. G. Warner, Bloomfield, Iowa.

Silver Wyandotte Chicks—First, W. A. Houghtaling, Indianola, Iowa; second, F. F. and V. G. Warner.

Golden Wyandotte Fowls—First, Buck Bros.; second, F. F. and V. G. Warner.

Golden Wyandotte Chicks—First, F. F. and V. G. Warner; second, E. G. Roberts.

White Wyandotte Fowls—First, Mrs. N. B. Ashby, Des Moines, Iowa; second, F. F. and V. G. Warner.

White Wyandotte Chicks—First, Buck Bros.; second, E. G. Roberts.

Buff Wyandotte Fowls—First, Dr. L. D. Carpenter, Indianola, Iowa; second, E. G. Roberts.

Buff Wyandotte Chicks—First, Buck Bros.; second, F. F. and V. G. Warner.

Partridge Wyandotte Fowls—First, Rev. A. B. Adams, Altoona, Iowa.

Silver P. Wyandotte Fowls—First, E. G. Roberts.

Silver P. Wyandotte Chicks—First, E. G. Roberts.

Rose Comb R. I. Red Fowls—First, J. G. Lembke, Griswold, Iowa.

Rose Comb R. I. Red Chicks—First, J. G. Lembke; second, J. G. Lembke.

Single Comb R. I. Red Chicks—First, L. Sheldahl, Waverly, Iowa.

Light Brahma Fowls—First, Buck Bros.; second, E. G. Roberts.

Light Brahma Chicks—First, Buck Bros.

Dark Brahma Fowls—First, Buck Bros.; second Buck Bros.

Dark Brahma Chicks—First, Buck Bros.; second, Buck Bros.

Buff Cochin Fowls—First, Dr. L. D. Carpenter; second, Buck Bros.

Buff Cochin Chicks—First, Buck Bros.

Partridge Cochin Fowls—First, Buck Bros.; second, Buck Bros.

Partridge Cochin Chicks—First, Miss E. M. Brinckler, Stuart, Iowa; second, Buck Bros.

Black Langshan Fowls—First, W. L. Williams, Williamsburg, Iowa; second, Walter Perkins, Ames, Iowa.

Black Langshan Chicks—First, W. L. Williams, Williamsburg, Iowa; second, J. R. Hoover & Sons, Oskaloosa, Iowa.

S. C. White Leghorn Fowls—First, E. G. Roberts; second, Buck Bros.

S. C. White Leghorn Chicks—First, Barker Bros., Indianola, Iowa; second, E. G. Roberts.

R. C. White Leghorn Fowls—First, E. G. Roberts; second, Mrs. S. P. Rogers, Pleasanton, Iowa.

R. C. White Leghorn Chicks—First, Mrs. S. P. Rogers; second, Mrs. S. P. Rogers.

S. C. Brown Leghorn Fowls—First, C. H. Cooley, Attica, Iowa; second, Wm. O. Coon, Des Moines, Iowa.

S. C. Brown Leghorn Chicks—First, A. E. Banta, Wheatland, Iowa; second, Buck Bros.

R. C. Brown Leghorn Fowls—First, J. R. Hoover & Sons, Oskaloosa, Iowa; second, Buck Bros.

R. C. Brown Leghorn Chicks—First, Buck Bros.; second, Buck Bros.

Black Minorca Fowls—First, E. G. Roberts; second, Buck Bros.

Black Minorca Chicks—First, Buck Bros.; second, E. G. Roberts.

S. S. Hamburg Fowls—First, Miss L. Cook, Morning Sun, Iowa; second, Buck Bros.

S. S. Hamburg Chicks—First, Miss L. Cook; second, Buck Bros.

R. B. Red Game Fowls—First, Buck Bros.; second, Buck Bros.

R. B. Red Game Chicks—First, Buck Bros.; second, Buck Bros.

B. B. Game Bantam Fowls—First, L. J. Schuster, Des Moines, Iowa.

B. B. Bantam Chicks—First, L. J. Schuster; second, Buck Bros.

Golden Seabright Bantam Fowls—First, E. G. Roberts; second, Buck Bros.

Golden Seabright Bantam Chicks—First, Buck Bros.

Buff Cochin Bantam Fowls—First, Buck Bros.; second, E. G. Roberts.

Buff Cochin Bantam Chicks—First, E. G. Roberts; second, H. H. Rich.

CLASS 67—PIGEONS.

Pair Homing Pigeons—First, John Peterson, Indianola, Iowa; second, John Peterson.

Pair Fantail Pigeons—First, Buck Bros.; second, Buck Bros.

Pair Pouter Pigeons—First, Buck Bros.

Pair Swellow Pigeons—First, Buck Bros.

Pair Tumbler Pigeons—First, Buck Bros.; second, Buck Bros.

Pair Turbit Pigeons—First, John Peterson.

IOWA STATE FAIR, 1906

Boys' Live Stock and Corn Judging Contest

FOR

IOWA STATE COLLEGE SCOLARSHIP

Rank	Name	Address	Stock—Possible 600	Corn—Possible 200	Total—Possible 800
1	Alex Wilson	West Liberty	460	178	538
2	Howard Stewart	Ainsworth	387	137	524
3	T. Bonar McKee	Indianola	374	149.5	523.5
4	Paul C. Taff	Panora	361	162	523
5	Arthur N. Fogg	West Liberty	351	163	514
6	Milo M. Fantz	Nevada	389	120	509
7	Elmus P. Shaver	Kalona	331	165.5	496.5
8	Wm. R. Gross	Avoca	345	151	496
9	Ivan O. Hasbrouch	Humeston	366	123.5	489.5
10	Frank N. Crow	Oxford	349	137.5	486.5
11	Murl McDonald	Ames	311	173	484
12	Roy A. Wood	Soldier	325	151	476
13	Leroy L. Shoemaker	Corning	331	141.5	472.5
14	Phil A. Igo	Indianola	342	123.5	465.5
15	Thos. McCall	Ames	314	146.5	460.5
16	Albert W. Weston	Audubon	312	147.5	459.5
17	Ralph E. Van Fossen	Adel	333	123	456
18	Carl E. Kennedy	Ankeny	351	104	455
19	Robert Campbell	Ames	319	135	454
20	L. E. Osburn	Bedford	329	120	449
21	Robert S. Plager	Grundy Center	327	121.5	448.5
22	E. J. Packer	Marshalltown	358	90	448
23	Perry R. Secor	Melbourne	324	123.5	447.5
24	C. H. Reeve	Geneva	304	137.5	441.5
25	Ben Walker	Swan	306	135	441
26	T. R. Reynolds	Pleasantville	322	112	434
27	Wallace Ashby	Des Moines	267	164	431
28	Roy Walker	Swan	290	137	427
29	O. W. Karns	Pleasantville	295	114	409
30	Lee Jeffries	Mitchellville	323	77	400
31	Paul R. Bemis	Bondurant	263	121	384
32	Monroe S. Dutcher	Des Moines	282	84.5	366.5

Per cent of highest, 67.2.
Per cent of lowest, 45.8.

J. A. McLEAN,
Superintendent of Contest.

Contestants for Iowa State College Scholarship—Boys Judging Contest—Iowa State Fair, 1906

PRESS COMMENTS

OF THE

IOWA STATE FAIR OF 1906

The Greatest Agricultural and Live Stock Exhibition ever Held in this Country.

Good Crops, Prosperous Times and Favorable Weather Combine to make the Fifty-second Iowa State Fair a Record Breaker.

Wallace's Farmer, Des Moines, Iowa.

Everything which has to do with the making of a successful State Fair was favorable to Iowa this year. Good crops, good prices, favorable weather for rounding up the summer's work, the desire of the exhibitors to show their products to the Iowa farmer, and on top of it all ideal fair weather, all combined to make the Iowa State Fair this year the greatest agricultural exposition that has ever been held anywhere in the world. It is not a new thing to record a record-breaking fair in Iowa. We have been doing that for five or six years past, until it has come to be the expected as a matter of course. Nothing but weather of the very worst sort could have prevented the most optimistic anticipating such an overwhelming success in both exhibits and attendance as was witnessed last week.

The farmers of Iowa have adopted the State Fair as their own particular institution, and as long as it is conducted in such a manner as to merit the patronage of decent, self-respecting people, nothing but very short crops or some untoward circumstance can prevent it from being successful. It would not be reasonable to expect that every fair will be as great as the one held last week; conditions may not always be as favorable; but there is no longer any question as to the position the fair occupies in the regard of the people. It has won this position by being maintained as a high-class institution, clean, wholesome, educational, and as long as it continues so it will have the patronage of the farm folks of Iowa in most liberal measure. And as long as the fair enjoys the patronage of the Iowa farmer it will have no trouble in filling up its pens and stalls and exhibition space of every sort, for the people who have things to sell that the farmer is likely to want to buy know from experience that nowhere in the country will they find people who appreciate good things so much as in Iowa.

ACHINE COMPANY

Scene in Machinery Department, Iowa State Fair, 1906.

The farmers of the State are not the sole patrons of the Iowa State Fair. Thousands of people come from the towns and the attendance of the Des Moines people is most liberal. But after all the success of the fair rests with the farmers, who make up a greater percentage of the total attendance than at any of the other leading State fairs; it is a more truly agricultural crowd than can be found at either Minnesota or Illinois, the two fairs which nearest approach Iowa. It is for this reason that people from other sections who want to get an idea of what Iowa is and what sort of people live here should come to the State Fair. Here they can see not only the people who have made Iowa the greatest agricultural State in the Union, but also what the State produces and what sort of things her people are interested in. Everything great in Iowa springs from the soil or reaches back to it.

Some folks who have the habit of looking at things without seeing them sometimes remark, "Well, it's about the same old fair." That is true in a very limited sense. It may seem the same to the person who looks only on the surface and who attends mainly out of curiosity, but to the person who attends for the purpose of learning what he can and to study the progress that has been made in things agricultural each succeeding fair is different; each one is an improvement over those which have gone before, not alone in magnitude, but in quality. We must either improve or go backward. There is no standing still for western people. The Iowa State Fair shows the advance made each year in our work of improvement in live stock, grains, fruits, machinery, and everything else connected with the agriculture of the State. There is no place the farmer can go to get such an accurate idea of the progress made as at this fair, and this very fact furnishes the stimulus needed by the breeder and the manufacturer.

The stranger can get an accurate idea of the Iowa people by simply studying the crowd that attends the State Fair. He will not need to watch them very long before he concludes that they are prosperous, honest, even-tempered, good-natured, and happy. There is no disorderliness, no drunkenness. On two different days last week there were more than sixty thousand people on the grounds. That is an immense crowd of people to transport back and forth and to take care of in the buildings and on the grounds surrounding the exhibits, but everybody took the crowding with good nature. Iowa people are seen at their best on occasions like this.

Notwithstanding the increased accommodations for the live stock display, it was necessary to house some of the stock in overflow tents. Every stall and pen was crowded. In the opinion of some who are qualified to judge, the horse exhibit has never been excelled at any show, while there were over three thousand hogs on exhibition. The live stock pavilion was crowded to its utmost capacity whenever the judging of the stock was in progress, and the strength of the stock industry in this State is witnessed by the fact that the seats in the live stock pavilion contained as many women as men.

One of the most instructive and interesting exhibits of the entire fair was that made by the Soil and Agronomy Departments of the Iowa Agricultural College in the Agricultural and Horticultural Building. The chief feature of this exhibit was a large map of Iowa made of soil taken from the different soil formations of the State. It was made on the floor and was probably twenty by fifteen feet. Each county was marked, and those looking at it were thus able to see at a glance the difference in the soil of different sections. This map was surrounded constantly from nine o'clock in the morning until six in the evening, and we venture to say, interested more people in the study of soil than anything that has been done in this State for some time. Having seen this map they will be better able to understand the bulletins issued on soil subjects by the College. Another interesting feature of the Soil

Department exhibit was the number of long glass tubes containing soil of different kinds. The tubes were about six feet long, each of them filled with soil. At the bottom of each tube was a wick running from the soil in the tube to a pan of water. The purpose of the exhibit was to show the capillary action of different kinds of soil; that is, the capacity of each to draw up water from below. There was a very marked difference between the different kinds of soil. These were only two of the number of different exhibits made by this department. It is not possible for us to name all of the interesting things in the College exhibit. A long table covered with weeds of different kinds, to each of which was attached a label bearing the name of the weed, attracted a good deal of attention. A large glass case containing the roots of a cornstalk gave the observer a better idea of the extent of the root system of the corn plant than he could obtain in any other way. Corn of different kinds was also exhibited, and trays containing sprouted grains illustrating the vitality of different ears. These two departments of the College are to be congratulated on the interesting exhibit made.

Among the other exhibits in the Agricultural and Horticultural Building was a very fine display of fruits grown in different parts of the State, bee products, county displays, etc. This building also contained the exhibit of dairy machinery, practically all of the leading dairy supply houses being represented by attractively decorated booths.

Practically all of the available space was filled with agricultural machinery, the different buildings being completely filled, while many exhibitors used large tents. In addition to the machinery shown under cover the quadrangle between the west gate and live stock pavilion practically all occupied with machinery which could be shown in the open air without damage. The farmers who attend the State Fair examine the display of agricultural machinery with a great deal of care. The increasing difficulty of securing competent help makes it necessary for the Iowa farmer to avail himself of every posible labor-saving device, and the manufacturer who has an improved machine of merit has no difficulty in finding customers at the Iowa State Fair. It is to be hoped that before a great while satisfactory buildings for the machinery departments may be erected. With such weather as prevailed last week the machinery exhibit can be seen in comfort, but with rainy weather, such as has often been experienced, this exhibit would be neglected.

The amusement features of the fair were superior to those of any other fair which we attended. We noticed but two shows which could be at all criticised, and nothing at all which tended to degrade. The airship, with the exception of one day, when the wind was too high to make a voyage safely, entertained the people. One advantage of an exhibit of this sort is that it can be seen from any part of the grounds, and the gentleman who made the ascension seemed to be able to control his unwieldy vehicle very satisfactorily. The impression made upon the people, however, was that this mode of locomotion would not become popular in the very near future. The evening crowds were entertained with an excellent exhibition of gymnastics, trained animals, fireworks, etc., in front of the grand stand.

A year ago we spoke of the necessity of several new buildings on the fair grounds. The two buildings most needed now are a new fire-proof grand stand and new barns and exhibit hall for the swine department. Fortunately nothing occurred this year to jeopardize the throngs which filled the grand stand every afternoon and evening. Everyone who is familiar with the conditions there, however, will agree with us when we say that the need for a substantial steel and concrete grand stand is absolutely imperative. A fire in the present structure, or a panic of any sort would result in a tremendous loss of life. The State of Iowa cannot afford to have so many of its people subject to this kind of a risk, and the Legislature next winter should not permit the session to close without making an adequate appropriation for the kind of a building which is needed.

The need for better barns and a show pavilion for the swine department is also imperative. Everything went along in this department satisfactorily this year, but simply because of the ideal weather. The experience of two years ago, when heavy rains completely flooded that part of the grounds in which the swine barns are located, should not be forgotten. The swine exhibit at the Iowa State Fair has, almost from its beginning, been one of the leading features. It is the greatest hog show in the world, and the swine breeders are fully justified in insisting that the Legislature make better provisions for their comfort and for the comfort of the people who wish to see this exhibit. When the books are balanced this year the State will find a nice surplus on the right side of the ledger, but this will all be needed in making the minor improvements on the grounds and in laying by a small surplus fund against an unfavorable year. The Legislature should not expect the State Board of Agriculture to erect any of the larger buildings. The fair funds will not permit.

THE STOCK SHOW.

Never have Iowa's resources as a live stock State shown to better advantage than at the Iowa State Fair of 1906.

It was a great show of an industry that has made Iowa rich and powerful. Like the State, the show was well balanced, with few "thin spots," and the thousands of Iowa farmers who came from all parts of the State thoroughly enjoyed it. At all times while the judging was going on the commodious live stock pavilion was crowded. Indeed, most of the time every seat was taken and the aisles were crowded so full that there was hardly room for a single person more. It seemed, a few years ago when the handsome brick judging pavilion was built, that it would be ample for all time to come for the making of cattle and horse awards promptly. So full were the classes this year, however, that not till after three o'clock in the afternoon on Friday were the horse awards completed, and if the exhibitors continue the strength they displayed this year it seems only a question of a short time till the need of separate pavilions for the horse and cattle shows will be imperative.

The crying need right at this time, however, is for a suitable pavilion for the swine exhibit. Beyond a doubt it will be erected before another fair is held, and other needed improvements in the live stock department will be made from time to time until the buildings at Iowa, like the show, will be the best of any state fair.

THE SHORTHORNS.

Well balanced, strong in numbers, with quality especially noticeable in the younger classes, the Shorthorns were the best lot from end to end that have been seen at an Iowa fair for several years, if not the strongest they have ever been. A particularly pleasing feature was the marked improvement of entries of Iowa exhibitors. There were a few "tag ends," and the Iowa exhibitors, who, with hardly an exception, lack the advantage of the professional fitters to whose skill the success of the herds that make the circuit are largely due, deserve much commendation for the way they have brought their cattle out. It is only within the past few years that Iowa breeders have turned their attention to showing. Each year has shown an improvement in their entries, and we want to pay them the compliment they deserve, and to bid the

N. A. Lind's Second Prize Young Herd of Shorthorns.

good work go on. It is evident that Iowa breeders must hereafter be considered a factor to be strongly reckoned with in the fight for supremacy in the show ring. which is as it should be. No State has better Shorthorns than Iowa. Why should she not take her proper rank in the Shorthorn shows? While the Iowa entries were not as strongly filled as the herds that make the circuit, nevertheless, they proved competition of the worthy sort, and in a number of cases made the decisions so close that it would have taken but little to turn the scale in their favor. They were close up in all the classes, and deserve much credit for the excellent showing made.

Mr J. H. Miller of Indiana, breeder of Polled Durhams and Shorthorns, judged the classes, and his work in general gave good satisfaction.

THE BULL CLASSES.

The bull calves were rather better than usual, with the bull calf class deserving particular mention. In this ring there were as good a lot of calves, take it altogether, as we ever remember seeing at a show. Iowa exhibitors were particularly strong in this class, Mr. Daws landing second, Mr. Akers sixth, and there were other entries clear outside the money that were almost on a par. The leader in the aged bull class, Whitehall Marshall, the champion of last year as a two-year-old, makes his initial bow in the aged class in grand form. He is altogether a bull that will be indeed hard to down this season showing in better form than last year. Iowa scored second honors on Mr. Burge's Money Musk, a four-year-old red bull of sterling worth that has been shown ever since a calf at the Iowa State Fair, and having won second in each instance. He is a grand type and demonstrated that the good bulls are not all roans. Messrs. Bellow's Good Choice, a Choice Goods calf, shown in just the condition to come on well for the balance of the season, scored first honors in the two-year-old class, making a very acceptable winner. Iowa had the honor of furnishing both second and third prize winners in Ardmore's Superbus, showing in grand form Mr. Judy's Clear the Way, who carried off first prize at Iowa last year as a yearling. He has done well since then and will bear watching, bidding fair to make an even stronger fight before the season is over. The yearling class furnished room for difference of opinion. The winner was the white bull Champion of Lyndale, an admirable type, and the second prize went to Wornall's Careless Conqueror, with Silliman's good, compact, thick roan bull, Cleverburn's Ideal, third. The latter made quite a strong show and was a strong favorite with a number for a higher place, some giving him preference for first. As the three bulls will likely meet at Minnesota, their rating there will be looked forward to with much interest. It is but fair to note that Champion of Lyndale was out of condition, having been off feed for a day, which fact the judge may have taken into consideration.

THE FEMALE RINGS.

The aged cow class was hardly up to standard, although there were some good entries in the ring. The two-year-old yearling, and senior heifer calves were all good rings in which the Harding entries carried off all the first ribbons, making a clean sweep of the female classes as far as first prizes were concerned, except in the junior calf classes in which the Bellows entry won first and the Saunders entry second with Iowa furnishing another winner in Parsons' fourth prize calf. The group and championship awards were also good rings, the young herd show being especially close.

THE ANGUS.

The "Doddie" rings were practically an "all Iowa" show, there being only one herd from out of the State, that of A. B. Puterbaugh, of Milledgeville, Illinois. The Angus show has always been a sensational feature of the Iowa fair, and this year was no exeception to the rule. While not quite as strong in numbers as they have usually been at Iowa fairs, particularly in the bull classes, competition throughout was of the closest sort. The herds have not tested each other's mettle at Iowa and a battle royal may be looked for throughout the circuit, as they are mighty close together in quality and it will take but little to turn the scale where competition is so close. It is in the Angus rings that the Iowa cattle make their strongest show, as Iowa Angus breeders not only carried off the honors at the Iowa State Fair, but will quite likely furnish a majority of the prize winners throughout the season, just as they have done in former years. The herds of Messrs. Binnie, McHenry, and Miller are all stronger than usual this season, while a new rival for show yard honors, and a most worthy one, is P. J. Donohoe, of Holbrook, Iowa, who makes his first appearance this year. His herd is execptionally strong, and seldom has his record thus far been equaled by a breeder in his first show.

Professor Kennedy made the Angus awards. There was some dissent from his opinions in some instances, but on the whole his work was up to the average.

The bull classes of the show were not up to those of last year, but brought out some unusually good entries. In the aged class the struggle was between Binnie's Jim Delaney, the first prize winner, and McHenry's Baden Lad. The former has the best front and middle, while the latter is superior in hind quarters, but not sufficiently so to offset the better heart and girth and better spring of the fore rib of his more successful rival, which carried the day for Jim Delaney. Mr. Donohoe won both the two-year-old and the yearling classes, having a splendid pair of bulls in Morning Star 2nd, a smooth, even two-year-old, and Glenfoil's Thickset 2nd, a yearling of much the same type. It was Mr. McHenry's turn in the senior calf class and Mr. Miller's turn in the junior calf class, they furnishing the winners in good rings.

THE FEMALES.

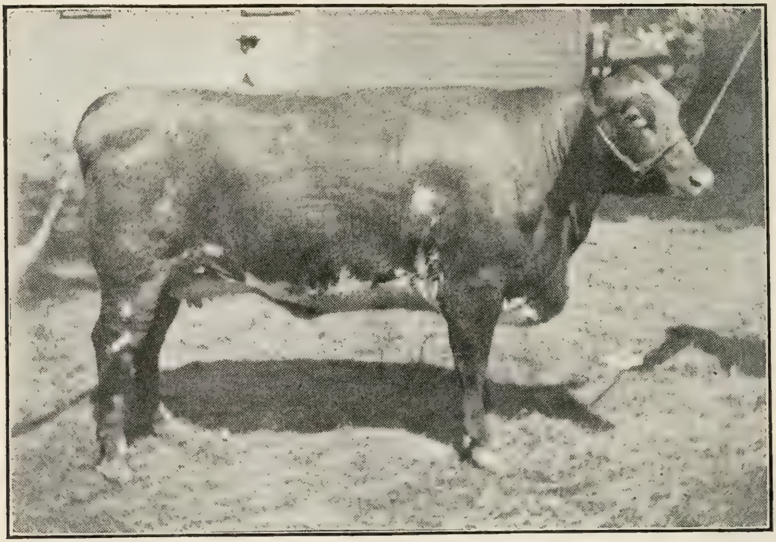
The aged cow class was quite a problem, and not an easy one to solve. Professor Kennedy's choice for the first place was Snowflake 2nd of Kirkbridge, which Mr. Miller, who is his own fitter, has brought on in splendid condition from last year, where she won second at the International. She has a wonderful back, and was presented in fine form. Glenfoil Rose, the champion of last year, is not yet in shape, having dropped a calf in July, but bids fair to be much stronger before the season is over. For the first time she failed to carry off the blue ribbon, but is liable yet to become strong before the season is over. Professor Kennedy's choice for second place was Binnie's Gussie of Kirkbridge, a cow of much the type as the first prize winner, Mr. Donohoe's Blackbird Favorite 2nd, a cow of splendid character and wonderful front, standing fourth. It was a grand ring of cows, and good judges are liable to differ between them at most any of the shows this season. It was mighty close competition all the way through the female classes. Entries were strong in numbers, very close together in quality, and they are altogether a lot that will bother the judges not a little to decide between them. The herd, group and championship awards were also close.

HEREFORDS.

While not reaching the phenomenal exhibit of 1905, which was one of the best Hereford shows made during the season, the Herefords at the Iowa State Fair this year were out in goodly numbers, and the quality, particularly the prize winners in the class, was unusually good. Iowa exhibitors were in a little stronger evidence than usual and had some excellent entries.

GALLOWAYS.

Iowa has usually been a very strong show for the Galloways. While four herds were out this year there were not as many entries in the classes nor was competition so close as in former years, Iowa formerly being the grounds at which the principal herds of the breed tested their strength for the initial show of the season. A number of herds that usually make the Iowa fair were absent this year. Several new breeders, however, partially made up for the loss.



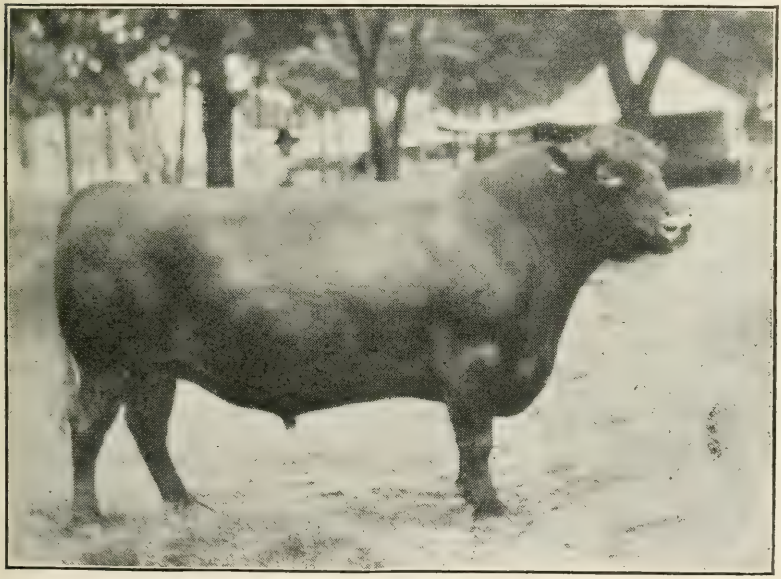
Royal Flora, Shaver & Deuker's Champion Polled Durham Cow.

POLLED DURHAMS.

While the Polled Durham classes were not large in numbers they were good in quality, a number of unusually good individuals in both old and young classes being shown. The principal exhibitors were Shaver & Deuker, of Kalona, Iowa, with full entries in most of the classes, and A. C. Woods & Son, of Pendleton, Indiana, who had strong entries in the young classes. There were also one or two exhibitors who had entries in a few of the classes. Most of the Polled Durham breeders that make the shows are from the east and the very hot weather immediately preceding the Iowa fair is undoubtedly responsible for not having a larger exhibit, as it is rather a hazardous risk to ship the show cattle in hot weather. We doubt not that this breed will come again much stronger next year, its popularity being strongly on the increase.

RED POLLS.

The Red Polls were well represented in numbers, and the quality of the rings throughout was good; indeed, it was one of the best Red Polled shows that the Iowa fair has brought out. Mr. G. W. Coleman, the well known Iowa breeder who has usually been an exhibitor, Adolph P. Arp, and A. E. Samuelson, also of Iowa, the latter making his first show at the Iowa State Fair, met the South Dakota herd of W. S. Hill and the Illinois herd of Geo. B. Buck & Co. Most of these herds had full entries in the various classes. Mr. Coleman had rather the best



Irwin, Champion Red Polled Bull of G. W. Coleman.

of it, carrying off more first pries than any other exhibitor, his herd being the strongest perhaps he has ever brought out, and his showing was a decidedly creditable one.

HOLSTEINS.

The Holstein show was the strongest that it has been in a number of years. The good Iowa herds of Messrs. Barney & Co., of Hampton, and McKay Bros., of Buckingham, and the two outside herds, made competition in all the classes close and interesting. F. H. Scribner, of Wisconsin, well known as judge of dairy cattle, made the awards, and his work on the whole was satisfactory.

THE HOG SHOW.

With Iowa first in corn and first in hogs it is fitting that the State's annual swine exhibit should be the greatest show on earth. The magnitude of the show is always a matter of comment, but the announcement that there were about three thousand head of swine in the pens at the Iowa State Fair this year will occasion no surprise. It is only the expected that has happened. There were nearly that many a year ago, and this year, as last, some were kept away because of lack of pens. Such is the growth of the Iowa hog show and the State Fair in general that the management is taxed to the utmost to keep up with the annual requirements of the show. New pens are needed, and what there are are old and leaky. The judging is done in the open when it should be done under roof.

POLAND CHINAS.

The Poland Chinas have always outnumbered any other breed at the Iowa State Fair, but the difference was less this year than ever before. There probably never was a year when the Poland China exhibits were so uniformly good throughout. Ed Klever of Ohio, did the judging, with W. E. Spicer of Illinois, acting as consulting judge. Mr. Klever had acted as judge at Des Moines before, and while he is acknowledged to be an expert judge, there was some criticism of the management because an eastern instead of a western man is almost invariably selected to do the judging at this fair. Mr. Klever's type is regarded by some as being more of the medium or small type than is in keeping with the requirement of the western trade, but a large hog with the quality and finish was not barred by any means, and there are a number of prize winners big enough to suit anyone. There were entirely too many good ones for all of special merit to get a place, and for this reason, perhaps, all those not in finished show condition were sent back to the pens without a ribbon. If we had any criticism to make it would seem that those in thin condition seemed to be discriminated against more than were the overfitted ones, thus putting a premium on the "big fat" or an overfitted condition. With very few exceptions the classes were all large and strong, some of them numbering well up towards a hundred entries.

DUROC JERSEYS.

The red hog at the Iowa State Fair becomes more formidable each year. At the ratio that the reds have been increasing on the Polands they will soon outnumber the latter breed. This year the show was characteristic for some exceptionally strong and large classes. The pig classes are always large, numbering from fifty to one hundred head in a class, but this year some of the older classes were also very large, and the judges had the hardest kind of a task to do justice to all and not overlook some of equal merit with the winners. Mr. L. H. Roberts, who has given good satisfaction on former occasions as judge at Des Moines, did the judging this year, assisted by W. Z. Swallow, who for over forty years has been a continuous Poland China exhibitor at the Iowa State Fair. They worked hard and conscientiously, and while there were some disappointed exhibitors, there was very little criticism. The champion boar this year is a son of last year's champion and is from the junior yearling class, which was about the strongest class in the show. Several in this class did not get a place that ordinarily would have been winners. One of these was the Johnson Bros. & Newkirk entry, which was one of the best hammed and best typed Durocs in the show. The first prize aged boar was also a first prize winner for the same exhibitors last year, but individual mention cannot be made of all the winners, much less of worthy ones who did not get a place. The show is not without lessons for the breeder and future exhibitor. Although the classes were large and strong the history of the prize winners will show that the small breeder and the one who breeds his own stock stands just as good a chance to win as any. The result shows, too, that the small breeder need not be deterred from showing because some have paid sensational or "boom" prices for stock, for the paying of such prices is no assurance that the owners will have a monopoly of the ribbons to the exclusion of the small breeder. The most successful Iowa exhibitors are men who started as poor boys and have bred their prize winners.

CHESTER WHITES.

The Chester White show was somewhat larger than last year and made one of the best showings this breed has ever made, although there were not so many exhibitors from outside the State as on some former occasions. For the first time in a quarter of a century Senator B. R. Vale, of Bonaparte, Iowa, was not an exhibitor. He was present, however, and just as active as ever in the interest of Iowa swine breeders.

BERKSHIRES.

The Berkshire showing was not so large this year as usual, although it is never large at Des Moines. Several prominent exhibitors of last year and before were absent, while there were several new ones to take their places. The showing for the most part was very good, while in some classes the competition was not strong. It was principally an Iowa exhibit, there being only one or two herds from outside the State.

THE BACON BREEDS.

The bacon breeds represented at Des Moines this year were the Large Yorkshires and the Tamworths. There was only a small showing of Tamworths, but it was the best showing of Yorkshires that has been made for some time.

THE SHEEP SHOW.

The Iowa sheep show continues to improve and this year's exhibit was one of the best that has ever been made. The pens were all full, and the classes in the show ring were strong both in numbers and quality. The Shropshires made the best show, the special prizes offered bringing out a goodly number of Iowa exhibitors besides those from without the State.

One of Chandler Bros.' Prize Winning Shropshires.

THE HORSE SHOW.

It has been many years since Iowa has had such a horse show as this year. Indeed, it is seldom that a State Fair has as high a class lot of entries as Iowa had this year, and only at the International show of recent years has so good a showing of draft horses been made. There were over five hundred head of draft horses on the grounds. They filled the horse barns, several of the cattle barns, and even then an overflow tent and temporary sheds had to be provided.

In character the show reached a new level for the State Fair shows and deserves now to be classed as "International." Exhibitors from Wisconsin, Indiana, Ohio, Nebraska, Illinois and Iowa made up the show, with Iowa contributing the greatest number of entries and receiving her share of the prizes. A very pleasing and notable feature of the show was the large number of American-bred draft horses in evidence and the high places in the awards which they received from the judges. The dawn of a new era is breaking upon the American breeder if he will only see and take advantage of the great possibilities which are suggested by the record of this show. Professor C. F. Curtiss made an excellent superintendent of this department and did much to make it the great success which it was. A competent superintendent means much to any department of a live stock show. Professor Kennedy placed the draft awards and gave, in general, good satisfaction. Mr. Dobson of Marion, Iowa, judged the standard bred horses, in which the classes were unusually strong, and Dr. Gibson of Des Moines, judged the Shetland ponies.

PERCHERON AND FRENCH DRAFT.

This class exceeded all others in number of entries, as all classes were well filled and made a high class show. It was in this class that the American-bred stallions made a remarkable showing, getting to first place in the two-year-old stallion class, second in the three-year-old class, and third in the aged stallions with the best class of imported stallions in competition. Professor Kennedy selected a good type and, with one or two exceptions, stayed with it through all the classes. Iowa breeders surprised themselves when discovering that the major part of the show of Percherons was made by them.

American Bred Percherons—Exhibited by S. B. Frey.

H. G. McMillans' First Prize Three-year-Old Percheron Filly.

BELGIANS.

The exhibit of these heavy bodied typical draft horses was unusually good. Particularly were the classes strong in the older stallion classes, the rings being large and the quality unusually good. It was as good, if not the best show in Belgian classes, that the Iowa fair has brought out, and one that could not but make friends for the breed.

SHIRES.

Competition was not so strong in numbers in the Shire classes, although quality was good.

CLYDESDALES.

This breed made a fine show. In uniformity of type and breed character in clean quality of limb and mode of action, it excelled all other breeds. The small bodied, long backed kind have been discarded for the stronger loin and deep bodied kind that have substance and endurance. Breeders seem to be more discriminating when it comes to selecting or using a stallion of this breed, and we think we can forsee a bright future ahead for the modern type of this Scotch breed. American bred colts made a good showing and were good enough to get first place in some of the classes. Robert Ogilvie of Chicago, placed the awards.

OTHER CLASSES.

The Standard driving horses, saddle horses, Shetland ponies, and coach horses made a nice display. On account of the large classes in the cattle and draft horse divisions, the harness horses were shown on the race track in front of the ampitheater. Another iteresting feature of the show was the exhibit of draft teams in harness. A number of farm teams were entered in this class. Grades and registered horses competed all in the same class. A class for farm teams only would make an interesting show.

POULTRY AT THE IOWA STATE FAIR.

Poultry breeders are well pleased with the exhibit at the Iowa State Fair this year. The largest number of birds shown in Des Moines for years was on the grounds, but there was room for more. The quality was good, possibly not so many of fancy quality as formerly, but a good, practical lot of fowls, such as should be seen at an agricultural show—birds that the farmer can afford to buy. Probably the largest class was the Barred Rocks. Many Buff and White Rocks of good quality and size were also in evidence. The Wyandotte breed, in all varieties, is apparently increasing in popularity in Iowa, and the Cochins and Langshans seem to be holding their own. The admirers of these latter breeds continue to breed and show good fowls themselves while waiting for the boom which they feel their favorites deserve. A few Orpingtons and Rhode Island Reds were on hands, and a fairly large class of Leghorns. The Leghorn always shows off well. Owing to its size it does not seem to suffer from the heat as the larger breds do, and its alert, bright appearance never fails to attract those who are interested in chickens only in a general way. The exhibit of turkeys, ducks and geese was not large, but of good quality. Some of the geese attracted much attention because of their size. We judge from the interest shown in these and in ducks that more farmers are going into the geese and duck breeding than ever before. Turkey raising is becoming a more difficult undertaking each year, and the farmer seems turning toward geese and ducks to take their place. The exhibit of incubators and poultry suplies was small. It seemed to us that in the matter of beef scraps and animal foods in general a good exhibit might have been made.

The poultry hall was well filled most of the time, the sentiment of the people being well expressed by one lady we overheard saying to her companion, "Poultry is getting to be such a large factor in our commercial world, and the revenue from it so great that I feel that I must keep in touch with what is going on in the poultry world in order to keep up to date and well informed on matters of general interest." This spirit is bound to increase the value of exhibiting at the agricultural fairs. When chickens get to be the style, when people throng the poultry hall as they do the exhibition hall, as they are beginning to do now, the poultry breeders of the State will feel that they can't afford not to show, the exhibits will draw the crowd, and the crowd the exhibits.

The fair management has done everything possible to encourage breeders to send in their birds. The building is admirably adapted to the purpose, being light, commodious, well located, and well ventilated. The assistant superintendent, constantly in charge of the building, is a practical poultryman who makes the interests of the exhibitors his own, and in spite of the petty annoyances of the position, remained unfailingly courteous and obliging to all. We would be glad to see farmers send in more poultry to the State Fair. There are few quicker ways of seeing the imperfections in your own birds than to join the line of anxious exhibitors around the table and place your bird by the side of the other fellow's. While it is distresing to note how the judge's eye lights on the weak points of your fowls, it leads to persistent effort to overcome that weakness by another year and try again, and we would urge all of our readers to patronize their county and state fairs and thus help to sustain interest in the poultry industry and to benefit themselves.

The judging this year, as last, was by W. S. Russell of Ottumwa, and, as usual, was most satisfactory. Awards were made promptly, winning exhibitors thus receiving the advertising which their premium entitled them to.

STATE FAIR POULTRY NOTES.

It is interesting to listen to the snatches of conversation caught as one passes through the isles of the poultry building:

"Why," exclaimed Mr. Shivvers, "people come from all over the State—I might almost say from every state—to this fair, and farmers ought to know the immense advertising an exhibit here gives them. They don't patronize the fair enough. The first year I came I brought my family at a cost of thirty-five dollars, and I made enough sales to pay all the expenses for my fowls and my family. The advantage is not immediate, but people take your card, and perhaps in a month or six months later comes a letter saying, 'I saw your birds at the fair,' etc., and you get an order."

"Why don't they classify the exhibits?" echoed one who knew why. "Because it would take twenty men to clasify all these exhibits and get the birds in place after judging. No one man could tell how much space to allot to each class and get the exhibits placed. Then, such an arrangement would practically drive out the large exhibitors of all breeds who are one of the attractions at the fair. If a man has a string of birds he wants them together where he can make a good show and care for them as easily as possible. Some of these men bring from 400 to 800 birds to a fair, and it is only right that they be accommodated. They help to bring a crowd which looks at their birds and buys of the men who keep their breed."

"I would like to forbid the hall to children afflicted with "card-o-phobia," exclaimed a disgusted exhibitor as he emptied his last box of cards. "I must leave my cards where visitors can see them when I am not on hand to show my birds. I want everyone interested in my breed to take a card, but it is a nuisance to see a string of children with no interest in the chickens carrying off a card from each coop, which they throw away as soon as they are out of the building."

THE IOWA STATE FAIR.

The Homestead, Des Moines, Iowa.

Prosperity is the most important factor that has to do with the making of a successful State fair or exposition of any kind. This, together with up-to-date management, is exactly the right combination. Each played its full part last week and the first State Fair of the season far excelled all past records made in the Hawkeye State. In the matter of receipts, a gain of fully 30 per cent was made over the record of 1905.

From start to finish the weather was perfect for exhibitors, for visitors and for the comfort of the animals on exhibition. The city of Des Moines handled the crowd better than ever before, and no small amount of praise is due the Commercial Club for the assistance in finding homes for the fair visitors. The practice of arranging in advance for lodging has done much to prevent the congestion of the streets during the evening hours by visitors who had not found lodging. Transportation service was improved over former years, as certain changes made by the Des Moines Street Railway Company facilitated the movement of the crowds. Jams of course will always occur when sixty or seventy thousand people decide to go to the same place at the same time, but we venture to say that visitors this year gained the impression that Des Moines was well equipped in her transportation facilities.

The striking feature of the fair was that it was well balanced, every department being well filled with exhibits. Possibly records have been made in single departments in the past that would excel the record of 1906, but taking all in all the fair held last week was the climax. The machinery in itself covered practically forty acres, and the crowds of inquiring visitors who stood around the machinery exhibit indicated that the farmers of Iowa are in shape financially to invest in labor-saving devices. Almost every manufacturer who made an exhibit declared that never before did prospects seem so bright for future business. The great lack in this department is a mammoth machinery hall, such as is supplied in one or two of the sister states. Other improvements are needed, and needed badly, but we hope in the near future to see a building that will house the greater part of the machinery.

The largest department of the fair was the swine, the showing made this year being simply marvelous both from the standpoint of numbers and quality. Suitable space was not provided for all of the exhibits, and the experience this year demonstrated beyond the shadow of a doubt that new buildings are needed in the immediate future. All kinds of temporarary structures were utilized for the purpose of housing swine to the almost indescribable inconvenience of the exhibitor. In many cases passageways were not provided, so that entrance to the pens could only be made from the outside. Among the appropriations that the next Legislature will make we hope will be found one for new swine quarters on the State Fair Grounds. There was a conflict last winter between those advocating a swine pavilion and those who thought that an amphitheater should come first, the result being that no appropriation was made for either. The crowds that were turned away from the old amphitheater this year indicated that a new one is an urgent need. It seems like poor business policy to turn away thousands of people every day who desire to pay for seats in the amphitheater. The amount lost each year would certainly pay interest on the investment.

It was a clean fair, scarcely a feature to be found on the grounds to which objection could be made by the most fastidious. Although strongly agricultural in every department, the policy adopted by the management was a broad-minded one, so that people from towns and cities found plenty of interesting sights and much opportunity for instruction. The attractions in front of the amphitheater were high class, and the exhibition given daily by the flying machine, or airship, proved to be a highly popular feature. We believe that the Directors of the State Fair are to be complimented for the wisdom displayed in putting on this feature. A flying machine directed hither and thither at the will of man is by no means in the same class as a balloon, because it represents a means of transportation that is now being studied by experts throughout the civilized world. Profesor Hamilton's feats in the air furnished not only entertainment, but instruction.

The plan of issuing a catalog and the placarding of all animals in the ring again proved highly satisfactory from the visitor's standpoint. Further improvement could be made if the rules pertaining to the placarding of animals in the stalls could be enforced. In some instances the class and lot number of the animal were given on the stall, together with the name, weight and breeding, but this is not generally true. It looks to the outsider as though a very small expense would furnish this information and make sight-seeing much more instructive. The example set by Mr. Frank W. Harding of Waukesha, Wisconsin, might well be followed by all exhibitors, and indeed forced by the fair association. All of his stalls were labeled plainly, so that the visitor obtained just the information sought.

Unfortunately, the Iowa fair comes too early to make a creditable display of agricultural products of the year, notably corn. In this instance the old products must be placed on exhibition. However, the agricultural exhibit was up to the standard. It was attractively placed, and the visitor who sought information concerning the method of producing any of the products on display could easily acquire the same. The fruit display excelled the record of former years, there being more plates of apples, for example, on the tables than have ever before been brought out. The quality of the fruit was good and the exhibit was exceedingly atractive.

We said in the beginning that sensible management has much to do with the success of a fair. In this case the directors of the fair are deserving of the highest compliments for their efforts in giving the people a clean, wholesome, entertaining and instructive fair. It must be a mater of great satisfaction to President Morrow, of the State Board, to see the fair brought to so high a degre of perfection under his administration. However, after the people have passed their compliments to the Board and to President Morrow, they reserve the right to place a larger share of credit for the success of the fair to the Secretary, John C. Simpson. Mr. Simpson has proven himself able to interpret correctly the desires of the people, and he has used his office to satisfy those desires in a way that has more than pleased the people of the State. He has always contended that the State Fair was not a money-making institution, at the same time he has stood for the inculcation of business principles into every department. What is taken in at the gates goes right back into improvements, thus laying the foundation for a still greater fair. Mr. Simpson did his part, the people of the State did their part, the exhibitors shirked no duty that fell to their lot and the result was that the 1906 fair was a record-breaker in every respect.

An educational feature of the fair that has attracted a good deal of interest is the contest for the $200 scholarship at the Iowa Agricultural College. This year thirty-two young men under twenty-one years of age entered the contest in the judging of cattle, horses, swine and grain. This movement was put on foot in 1904 and has been a popular feature ever since. The first year the scholarship was won by Ellis Rail, Birmingham, Ia.; the second by Mr. Chas. F. Steen of West Liberty, Iowa; the one of 1905 Mr. Roy Igo of Indianola, Iowa, while this year it again goes to West Liberty, being won by Mr. Alexander Wilson. The work was in charge of Prof. J. A. McLean of the Iowa Agricultural College, and was conducted in an orderly and business-like manner. In some instances the classes passed on by the students were the regular entries made by exhibitors, the awards for comparison being afterwards made by the regular judges of the departments.

CATTLE.

A close student of the cattle exhibits at the Iowa State Fair would soon comprehend the fact that this was not a record-breaking year. It was evenly balanced throughout, but the dropping out of six or eight of the best herds in the corn belt will be felt by any show. The Martin herd of doddies, from Churdan, Iowa, was not out this year; the notable Casey and Robbins herds were missed; the Brown, Moody, Clarke and Brookside Farm Galloways were not there, while in the Herefords the absence of the Funkhouser and Curtice herds made a noticeable difference in the exhibit of white faces. However, there were new breeders in every class, and in a number of cases herds without records as winners were brought out in excellent form this year, and with honor and credit to the breed carried away many of the coveted ribbons. The cattle department of the fair in its management reflects no small amount of credit on Superintendent Packard. He has succeeded remarkably in giving all exhibitors a square deal; he has put on competent judges and his arrangements facilitate judging to the greatest possible extent and at the same time make sight-seeing in the cattle rings agreeable to visitors. It was no off year in the matter of numbers, but, as said before, the dropping out of ten or a dozen good herds made a breach that was plainly apparent to the old-timer.

SHORTHORNS.

Without saying anything that would be a discredit to the other beef breeds, the Shorthorns were one of the most prominent features of the cattle display. This was due both to the numbers shown and the general excellence. To some there appeared to be less uniformity than in other of the beef exhibits, but this was more imaginary than real on account of the larger number of animals and the greater chance for variation. The work of placing proceeded slowly and lasted throughout the week. There were 166 competing animals and this meant full rings throughout. As many as twenty-two lined up in one or two. At times the whole west portion of the judging pavilion was monopolized by Shorthorns and short leets were a necessity. Competition was active for winners, though some entries shown were below the Iowa standard. From the younger classes came the larger number of entries, and excellent quality and good type were evident in every ring. Good, useful breeding stock was more in evidence than extremely high conditioned stuff. Winners of last year's prizes were few, but conspicuous wherever they appeared. Twenty-two herds entered by Iowa breeders made up the greater part of the display and may be partly accounted for by the special Iowa prizes offered. Of these herds Burge, Edwards and Saunders were the most consistent winners. F. W. Harding showed in his usual style and with much success, securing a good share of firsts, also supplying the champion male and female. Tomson brought out a quartet of red females in the get of sire class that for even, deep covering and type would be difficult to duplicate anywhere. Part of his herd was at disadvantage for lack of high fitting. J. H. Miller of Peru, Indiana, judged throughout the show.

HEREFORDS.

The Herefords made a very presentable showing for the first display of the season. Among the older herds of the fair circuit were some unusually strong animals, and while there was some stock that fell below the standard for a fair of Des Moines' rating, these were found in the hands of less experienced showmen. Though nearly all of the firsts fell to one herd, it was no indication that competition was lacking, for in the aged bull class five animals of very good quality made a difficult bunch to place. A number of very fine young things were brought out. The champion bull and cow were furnished by the herd from Wisconsin, which was in fine condition, and will be watched closely throughout the season. Judge Ed Taylor of Fremont, Michigan, gave general satisfaction by his fair-minded decisions, although there was some difference of opinion among the ringside talent in the placing of aged bulls and two heifer classes.

ABERDEEN ANGUS.

The Aberdeen Angus display as a whole was not up to the standard that the supporters of this breed would have desired. Excellence was too exclusive and confined to a few herds, while the presence of many small herds cut down the size of the totals. The absence of several of last year's best herds made a noticeable difference in the competition, as was most evidenced in the aged and herd classes. The work of judging proceeded rapidly and Professor Kennedy found the winners without much trouble in most of the rings. In the aged bull class, A. C. Binnie was able to win with Jim Delaney, a bull presenting a stylish carriage and smooth covering of flesh. Champion also went to this bull as a sire. The champion cow came from the herd of J. H. Donohue in the two-year-old heifer class, Eileen Lass. In the yearling heifer class competition was close and interesting and there was a considerable difference of opinion in the minds of some as to whether the type exhibited by the winner was superior enough to place her over the type and superior finish of second choice.

GALLOWAYS.

But four herds were shown in this competition and the placing of ribbons proceeded rapidly. Allen Thompson of Nashua, Missouri, made the awards in a very agreeable manner, although there was a chance for some contention in the herd classes, where it was a question of chosing types. In some of the young heifer classes the difficulty was in balancing scale against type and quality. The champion bull, Pat Ryan of Red Cloud (20038), as well as the champion cow, Lady Charlotte 24814, a two-year-old, were of the smooth, thick-flesh kind admired by breeders.

POLLED DURHAMS.

With a new exhibitor and more animals over last year's show came increased interest and competition for the supporters of this breed. Young stock of good quality and finish comprised the greater part of the exhibits. In the aged and herd classes no competition prevailed. Considering that this breed is just coming into prominence in the State, the rings were very satisfactory. There were many inquiries from farmers for young bulls. E. T. Davis, the Angus breeder, placed the ribbons.

HOLSTEINS.

The small number of exhibitors in this breed was more than counterbalanced by the large herds that were brought out. Old showmen divided honors this year with a new breeder, who showed some individuals of splendid quality and dairy type. Classes were large and close enough to make Mr. F. H. Scribner of Rosendale, Wisconsin, some interesting work. The five prizes offered were quite evenly divided, although C. F. Stone took the most firsts on the fine form and type of his offerings.

JERSEYS.

From the nature of the Jersey showing it would appear that Iowa breeders had not as yet the proper appreciation of the value of an exhibit at the Iowa State Fair. The display was conspicuous for quality rather than for size, which was a most commendable feature. Neat heads and "Jersey" expression, fine bone and hair and roomy animals characterized the exhibits. The most interest centered about the herd of Hunter & Smith of Beatrice, Nebraska, who had a large herd that took most of the best ribbons and supplied the champion male and female. F. H. Scribner of Rosendale, Wisconsin, did the judging, and his work was most creditably done, pleasing both exhibitors and spectators.

HORSES.

Prof. C. F. Curtiss, the notable live stock judge, was placed in charge of the horse department after his appointment as director of the State Fair. Since that date this department has taken on new life, one result of which was that the supply of stalls ran out long before all the animals were cared for. It necessitated the building of temporary structures and this experience suggests the widsom of providing more room for this department in the immediate future. There was a good showing of all breeds of horses and no feature of the fair was more attractive than the program carried out each afternoon in the horse ring. Thousands of people watched the placing of the ribbons every day, and the interest was sustained to the very last. Unfortunately, the sickness of the judge, Mr. Ogilvie, delayed part of the judging. One gratifying feature of the horse show was the number of homebred animals entered, mares, stallions and colts. What the horse department needs now is a pavilion to be devoted solely to the judging of horses, so that all the awards may be made early in the week.

BELGIANS.

The Belgian show was not up to the standard set by the Percherons or the Clydes, nor even to that of the Shires. Competition between breeders was confined to the stallion classes, the female entries being all made by Lefebure & Son of Fairfax. There were some heavy, coarse-boned animals, very much predisposed to unsoundness in a few of the classes. Mr. Ogilvie was selected as judge for this class also, but his illness compelled him to keep to his room, so his place was filled by Messrs. Truman and Galbraith.

CLYDESDALES.

The Clydesdales made a most creditable showing this year at the fair. One of the exhibitors said that it was almost as good a gathering of Clydes as one could see anywhere, and to an observer that statement seemed very true indeed. Although the entries were not numerically so great as made in some of the other breeds, the general quality was fully as high. No sensational horses were shown, but the general run was of the good kind the farmers love to see. The prize winners were not so highly fitted as those of the other breeds, but were in excellent breeding condition. In addition, it may be said to the credit of this Scottish breed that the tail-enders were a minus quality in the competition.

PERCHERONS.

Supporters of the Percheron breed of horses have reason to be proud of the showing made by the representatives of this breed at Des Moines. Since it was the opening fair of the season, only a medium show was expected, but the hopes of the few who have this section in charge were more than realized when 140 head had to be supplied with stall room. The barns were taxed to their full capacity. A great deal better showing was made than last year, both as to numbers and quality. The stallion classes brought out a number of well-fitted entries from the McLaughlin stables, the other breeders not having so high a finish on their horses as this firm. However, that did not prevent the outsiders from breaking into the money, as usefulness carries more weight in judging than does finish. In the mare classes very breedy females were the order all the way through, no highly pampered stuff being present in these classes. McLaughlin Bros. had some newly imported winners from France that made the competition very interesting in the aged, the three-year-old and the two-year-old stallion classes. Lakewood Farm deserves special mention for the high class of their females and young stock by Calypso. The old champion has proved a most excellent getter and is one more of the show winners that have helped to disprove the statement that "show stock are not good breeders." The large number of entries made good classes, and the task of picking the winners was no easy one. Professor Kennedy, however, made the awards to the satisfaction of all concerned.

ENGLISH SHIRES.

Some fifty head of English Shires were on exhibition in the big barns. Among this number were some good, drafty horses of quality and of the right breeding sort. Classes were not very full and the judging was a comparatively easy task. R. B. Ogilvie was unable to go through the whole breed and Mr. Galbraith finished for him. As a rule the horses shown were of the leggy kind and lacked substance, although some few were shown of good, massive type.

COACHERS.

The French and German coachers were classed together, there being only two divisions, one for stallions over four and one for three-year-olds. Some good actors were brought out, but the classes throughout were not so well filled as in former years. There were some good ones, just the same.

ENGLISH COACH BREEDS, CLEVELAND BAY AND HACKNEY.

Truman's Pioneer Stud Farm, Bushnell, Ill., were the only exhibitors and were awarded the blue ribbon in each of the four classes. They had a string of good ones and their stalls were the center of attraction during the week.

DRAFT GELDINGS OR MARES.

Iowa has never been able to support very many entries in the draft gelding and mare class, and this year proved no exception to the rule. Armour & Co. of Chicago entered individuals from their six horse team, and naturally won some premiums.

SHETLAND PONIES.

Shetlands are always popular, and were this year more than ever. The large tent, just west of the judging pavilion, sheltered seventy tiny ones, which proved their popularity by the way with which the tent was crowded at all times of the day by women and children. In the judging ring the little fellows made a most attractive showing when ponies in harness were passed on, and many good specimens of this diminutive breed appeared in this class. Many sales were made in the tent and prices realized more than recompensed the owners.

SWINE.

The bringing together of practically 3,000 pure bred hogs is an event in itself of interest, and as that number were on exhibition at the Iowa State Fair grounds last week it is not a matter of surprise that the

Scene in Swine Department, Iowa State Fair, 1906.

hog department held its own with all others in maintaining throughout the week the interest of the fair visitors. Superintendent Johnston of that department had an exceedingly difficult task on his hands, because there were hundreds of pens applied for that could not possibly be supplied. Almost every hole and corner where a pen could be erected were utilized, and necssarily some exhibitors were disappointed in the quarters furnished them. This is the fault of neither Mr. Johnston or the board of directors of the fair, because the State of Iowa has refused up to date to appropriate funds for the erection of suitable quarters for the swine exhibit. The fact that the weather was perfect throughout the week contributed much to the comfort of the exhibitors. A similar fair in bad weather would be unendurable, and we sincerely hope that the next legislature will be liberal-handed enough to supply the needed improvements for this department. The swine industry of the State is so large that anything but the best equipment at the State Fair for this class is false economy. The opportunity which is afforded visitors for seeing the prize animals in the ring at present is abominable, and when the weather is hot it is dangerous to show the heavy fat hogs in the sun. We doubt if a single argument can be advanced for neglecting this department any longer.

DUROC JERSEYS.

The Duroc hog show at the Iowa State Fair this year, as was expected, was a very large one. Possibly there were not quite as many numbers entered as last year, but it was generally conceded by all who looked them over that the offering was better in every respect. Messrs. L. H. Roberts of Paton, Iowa, and W. Z. Swallow of Booneville, Iowa, both experienced swine breeders, were the judges. They did their work in a conscientious manner and pleased practically all the exhibitors, so far as possible. Something over 1,000 durocs were on the grounds. The number of exhibitors from surrounding states amounted to some 85. An exceptionally strong class was the two-year-old boar offering, there being twenty shown. Messrs. Johnson Bros. & Newkirk and C. W. and Wm. Reed of Rose Hill, Iowa, owners of the boar Advancer, won first in this class, while Manley & Co. of Lyons, Neb., took second on Junior Jim by Chitwood. It was no easy matter to judge this class, as was noted by the time being taken by the judges in placing the ribbons, practically two hours being devoted to this class alone. In the under six months boar class there were not as many shown this year as last, there being 110 head last year, while this year only 61 head were entered. Breeders, however, were satisfied that this was enough to afford strong competition. First prize was also won by Johnson Bros. & Newkirk and C. W. and Wm. Reed on pig by Model Chief out of dam, known as Bessie D. The champion sweepstakes boar of any age was awarded to H. S. Allen of Russell, Iowa, on Crimson Wonder Again. This again shows that good blood tells, as the sire of Crimson Wonder Again, Crimson Wonder I Am, won sweepstakes at the Iowa State Fair of 1905. The champion boar bred by exhibitor was awarded to Johnson Bros. & Newkirk and C. W.

and Wm. Reed on Advancer. Edmonds, Shade & Co. of Kingsley, Iowa, took the sweepstakes on champion sow, also champion on sow bred by exhibitor, Royal Blossom 5th by American Royal. There were four entries in this class. F. E. Garrett of Lohrville, Iowa, has a decidedly good individual in Ruberta by a half brother of Crimson Wonder. Many Duroc breeders had practically decided that she would be the winning champion sow any age, and it was indeed hard to decide just who would secure this honor. Messrs. Roberts and Swallow in judging did not act hastily, but gave every class its own good time, and general satisfaction was accorded.

CHESTER WHITES.

There were twenty-two exhibitors of Chester Whites at the Iowa State Fair, these showing 462 animals. Taking it all in all, there were many visitors on the ground who claimed that the Chester showing excelled all former records in the matter of quality. Messrs. Humbert & White of Nashua, Iowa, made a showing that would stand high in any company, and the number of blue ribbons, as indicated by an examination of the prize list, which this firm won, is a fair index as to the merit of their herd. Mr. L. C. Reese of Prescott, Iowa, came in for a share of the ribbons, and succeeded in capturing the champion prize for the best Chester boar on the grounds, though the firm of Humbert & White landed the champion premium on the best sow. Mr. W. Z. Swallow placed the ribbons and did it in his usual painstaking and conscientious manner.

BERKSHIRES.

Although there were but 170 Berkshires on exhibition, these being shown by eight exhibitors, yet this breed attracted much attention. The prize-winning animals were notable for length of body and for feeding qualities. The exhibit demonstrated that it is possible to get the long side, the heavy ham, and at the same time keep the back strong and the face reasonably short. Although less in numbers than the Polands, Durocs and Chesters, the show of Berkshires lost nothing by comparison with any breed, as they were a select lot throughout.

POLAND CHINAS.

The Poland Chinas headed the list this year in the number of animals on the grounds, there being a total of 1,150 in the pens. This is a little over 100 pigs than were on the grounds last year. To say that the exhibit was a grand one throughout is putting the matter mildly. Even the pigs that were there for sale, but not entered for exhibition, were in most instances above the average, and judging from the number of sales made during the week we apprehend that a large number of corn-belt farmers started off with something good, while scores were made happy over the purchase of herd headers. Poland China breeders have every reason to fell gratified over the continued popularity of this breed, and especially concerning the excellent showing made. Apparently the question of bone is being emphasized more than formerly because practically all the winning hogs carried their great weight without showing the least sign of breaking down. In the matter of type the medium sized animals of superior quality won out this year against those of more scale, but with less quality. Judge Klever and Spicer adhered throughout to the matter of type and gave general satisfaction. Of course there were instances where exhibitors took lower places than they anticipated, but this will always occur. Ringsiders as well as exhibitors were impressed by the fact that all decisions were not only honestly, but intelligently placed. Breeders outside the State won many of the blue ribbons, a fact that should stimulate Iowa swine men to purchase the best blood that is obtainable to improve their herds.

YORKSHIRES.

There were but two exhibitors in the Yorkshire classes, but these made an unusually good showing. Thos. H. Canfield of Lake Park, Minn., exhibited thirty head and practically filled all classes. Many of his animals were descendants of winners at the St. Louis Exposition, and his pens attracted much attention from fair attendants. Mr. Canfield is the largest breeder of Yorkshire hogs in America, and has undoubtedly done more to bring this breed before the public than any other breeder. The other exhibitor in the Yorkshire class was Mr. B. F. Davidson of Menlo, Iowa. Mr. Davidson exhibited eighteen good ones. They were in excellent show condition, being in a somewhat higher degree of flesh than Mr. Canfield's, though for the bacon hog the Canfield stuff was in excellent shape. Prof. Thomas Shaw, formerly of the Minnesota Agricultural College, did the judging in a most satisfactory manner. His task was not an easy one, owing to the somewhat different types of hogs represented in the various rings. Judging by the number of sales made by these Yorkshire breeders it may be expected that there will be a larger turnout next year. Many who purchased foundation stock expressed their determination to exhibit in the future.

TAMWORTHS.

This is the first year that a class for Tamworth hogs has been made at the Iowa State Fair. Two exhibitors were there with their hogs and they made an excellent showing. The breed attracted considerable attention and farmers in general were surprised at the large scale of the aged animals. Their long noses came in for their full share of comment. The animals on exhibition were typical of the breed, and this class should be maintained by the board of directors. No doubt a larger showing will be made next year.

SHEEP.

The interest in sheep still grows in Iowa and there never has been so many good sheep on the State Fair Grounds as were there this year. The price of mutton and wool has created a demand for sheep that has not been equalled heretofore. The excellent exhibit this year, as well as the large crowds of interested onlookers while the judging was going on, indicate a most healthy interest in this important class of farm animals. Much improvement has been effected since last year in the way of providing suitable quarters for the sheep and shepherds. The provision for a suitable place for making awards has been provided in a temporary way, and sheep exhibitors look forward to a time when a permanent judging ring will be provided, which can not be accomplished until more ground has been added, which probably will occur in the near future. As usual, the Shropshires show that they are the leading breed and appear in the largest numbers.

Showing Section of Fancy Work Display Cases, Exposition Building, Iowa State Fair, 1906.

THE IOWA STATE FAIR.

Farmers' Tribune, Sioux City, Iowa.

The Iowa State Fair has been growing in importance from year to year. Ten years ago its receipts, in round numbers, amounted to $33,600; five years later, in 1901, to $43,400, and this year to approximately $100,000. There was a total attendance this year of 250,000, which was a gain of 30 per cent over the attendance a year ago. Every day of fair week brought good weather. No rain fell throughout the entire week, and the temperature was just right to enable the thousands of visitors who were daily in attendance to enjoy the fair to the fullest extent. As is usually the case, Wednesday brought the largest number of people, and the attendance ran up to 75,000, as compared with 66,000 on the same day of the week in 1905. On that day it was evident to everyone that the facilities on the grounds were wholly inadequate to care for such a large crowd. It is to be hoped as a result of this that every man who attended the fair this year may go home and work enthusiastically with the view of creating a strong sentiment in favor of larger State appropriations for the greatest live stock fair in the West. The fair management have decided to add seven acres to the present grounds, and this will aid somewhat in making room for increased attendance for a year or two to come. If, however, the Iowa State Fair continues to grow as it has been growing during the last three years, it will only be a short time until the grounds, with the prospective addition, will again be too small. The legislature can well afford to make liberal appropriations for the Iowa State Fair. It is probably not too much to say that our State Fair is one of the greatest educational institutions in the State of Iowa. It is also the greatest advertising institution for the State that we have, and hence it would be almost impossible for the legislature to be too liberal with its appropriations in the future.

Prominent live stock men expressed themselves freely to the effect that they had never before seen a live stock show equal to that at Des Moines this year. The number of cattle, horses, sheep and swine was so large, the quality of the stock so superior, that nothing but praise was heard for the Hawkeye State. The fair management deserves praise for the excellent manner in which they conducted their business affairs throughout the entire week. Exhibitors and visitors alike seemed to be satisfied in the fullest sense of the word. On every hand, however, it was noticeable, as stated before, that many improvements are needed. A new horse judging pavilion is badly needed. While the present pavilion is large and commodious and well suited for the purpose for which it is used, yet it is not large enough to accommodate both cattle and horses.

The horse judging was not finished until Friday; that, of course, is wrong. All live stock ought to have their ribbons early in the week, so that visitors may study the prize winners, and in that way ascertain what constitutes a first class individual in a given breed.

Farmers who are interested in any particular breed study each individual of that breed, and invariably place the prize winners in accordance with their own judgment. It is needless to say that men of that stamp are naturally interested to see how their judgment compares with that of the expert judge, and they should be afforded an opportunity to make such comparisons. If this is not afforded them, the benefit of the fair is very largely lost. It is to be hoped therefore, that the next legislature will provide liberally for the erection of a horse judging pavilion.

More cattle barns are needed; temporary barns had to be constructed to take care of the stock that swarmed to the grounds several days before the fair opened. Several new hog barns were erected for this year's show, but more are needed. Iowa is the greatest hog state in the union. Her annual hog show is larger than that of any other State, and provisions should be made to encourage the progressive spirit that prevails among her swine men. The sheep too need better accommodations. The exhibit this year was very good, but the accommodations were not what they should have been. Interest in the sheep industry is on the increase, and we look for a much larger exhibit next year, and it is hoped that provision will be made to accommodate every man who desires to show his stock.

A large agricultural building is needed as much as the horticultural and agricultural building was two years ago. Iowa must begin to devote more attention to exhibits of farm products. The Iowa State Fair grain and general farm exhibit is not equal to similar exhibits at other State fairs, and there is no reason on earth why it should not be. Our fair has developed along live stock lines more than along the lines of general farm exhibits. While it is very gratifying to be able to say that we have the greatest live stock fair in the country, it would be equally gratifying to say that we also have the greatest general agricultural and horticultural fair in the country.

Farmers must insist upon more liberal treatment at the hands of the next General Assembly and no one should interpose objection. Iowa is distinctly an agricultural State. If the farmers are prosperous the whole State is prosperous, and every taxpayer should be willing to help make the State fair, which is one of the greatest, and in some respects, the greatest educational institution in the State. It may not be amiss to state that the farmers have a right to ask for such State support as they see fit to ask for; they are the people who pay the taxes. They are the people who contribute over three-fourths of the money the legislature disposes of and they want some of it for their great fair at Des Moines.

EXHIBITS.

It will be impossible for us to give a full description of the different exhibits; we can only mention a few of the more important ones. One of the most interesting exhibits in the horticultural building was that made by the Iowa State College. Prof. Holden had a number of cornstalks on exhibition from fields that had been in corn for one, two, three and four years in succession. These stalks illustrated in a very striking manner the effect of the corn root worm. The stalks from the field that had been in corn only one year were large, vigorous and had strong roots; those from the field that had been in corn for two successive years were smaller and the root development not so strong; those from the field that had been in corn for three successive years were still smaller and the root development weak, while those from the field that had been in corn for four successive years were very much stunted, bore nubbins instead of good ears, and were so weak that a comparatively small wind would break them down, and their root development was very weak indeed. The lesson that these stalks taught was a very valuable one and thousands of farmers commented upon the striking difference in the stalks from the different fields. Prof. Holden also had large drawings of the more common insect pests that affect corn, which showed the life history of each, which also taught valuable lessons. The soils department of the Iowa State College had the map of the State of Iowa made of the soils from different sections. The soils for this map had been collected from all over the State, and the map represented very accurately the different types of soil in the State. Farmers were very much interested in the map, and invariably compared the soils in their own sections with that in the map and all stated that it accurately represented soil conditions the state over. In this connection, we suggest that those who are interested in Iowa soils write to the soils department, State College, Ames, Iowa, for a bulletin on that subject. The different soil types in Iowa are: Missouri loess, Wisconsin drift, Iowa drift, Mississippi drift, and the Southern Iowa loess.

The following counties had very creditable displays in the horticultural building: Warren, Mills, Clayton, Delaware, Polk, Lucas, Cass and Lyon. The horticultural exhibit was much larger than it has ever been before, and the display of fruit was particularly nice. It was neatly arranged, and the benches upon which the apple plates set were kept neat and clean throughout the entire week. The improvement in this particular was very marked.

The dairy exhibit, while it was very good, was not so large as one would expect in a State that produces more butter than any other State in the Union, with the exception of New York. It appears that a strong effort should be made to encourage the dairy industry more than it has been the case in the past.

HORSES.

Prof. C. F. Curtiss of Ames, who was director of the horse department, was very enthusiastic over the immense display of fine horses that were at the fair this year. "Leading horse breeders tell me that we have the largest and finest display of pure bred horses at the fair this year that they have seen in a great many years," remarked Prof. Curtiss at the fair. It seems that breeders of horses the country over are this year taking a much greater interest than usual. The Percheron classes were remarkably well filled and the quality of the entries was beyond criticism. Never before has there been such a fine Percheron show at Des Moines, and we doubt if there has ever been another Percheron show in the country equal to it. There were no less than one hundred and forty Percherons at the fair. They were brought by nineteen exhibitors, sixteen of whom were from Iowa. It was no easy task for the judge to place the horses in the various classes. McLaughlin Bros. of Columbus, Ohio, had several stallions on exhibition that had been recent prize winners in France. Olbert, champion aged stallion at the last International in Chicago, who is the property of H. G. McMillan of Rock Rapids, Iowa, was defeated by an imported stallion owned by McLaughlin Bros. There were those who considered that the Lakewood stallion should have stood first. He was considered by many horsemen to be a better type of drafter than the McLaughlin stallion, although the latter is probably a little smoother. The Clydesdales classes were also well filled. There were nine exhibitors present with sixty-five horses. The Clydesdales made a good showing. The bulk of them were of superior quality and did the breed justice. There were fifty Shires on the grounds and five Shire exhibitors. As a whole the Shires were not up to the standard. There were a good many leggy individuals among them. The classes were not very full, hence the judge had a comparatively easy time. Six exhibitors were present with representatives of the Belgian breed. The Belgian show was not very large, nor was the quality as high as seemed desirable. From a quality standpoint the Belgians stood below the Shires and the Clydesdales and also, of course, below the Percherons; at the same time, there were many fine specimens from the studs of some of the well known breeders.

CATTLE.

The Short-Horn classes were unusually strong this year. F. W. Harding of Waukesha, Wisconsin, was present with a remarkably strong herd. Every animal in his herd proved to be a first prize winner, and it is not too much to say that Mr. Harding's herd was the strongest Short-Horn herd that has ever been exhibited at Des Moines. But Mr. Harding by no means had everything his own way; there were lots of other fine individuals from herds of Iowa breeders. The classes were all very full, and the Short-Horn show was considerably larger than a year ago. Cargill & McMillan and Van Natta & Son vied with each other for ribbons in the Hereford classes. Both made a very strong showing. Among the Iowa Hereford breeders were: Edmonds, Shade & Co. of Kingsley, D. W. Ohl of Iowa City, and Way & Son of New Sharon. All of these breeders made an excellent showing and all carried ribbons home with them. The Angus show was larger than the most enthusiastic lovers of doddies had expected. Several of the old showmen dropped out from the ring this year, but their places were filled by young, enthusiastic breeders who are going into the business with a determination to win out and to do their utmost toward popularizing their favorites. The new barn that was erected specially for the Angus breed was well filled; in fact, room had to be secured elsewhere to accommodate the seventy-three head that were on exhibition. Fifty-four Galloways were brought by four exhibitors. The Galloway show was about the same as it was a year ago; there were many good, strong individuals present, and also some that did not do full credit to the breed. The Polled Durham exhibit was very strong. Three Iowa breeders, with seventeen head, put up a strong fight with Woods & Son of Pendleton, Indiana, who were there with nine head, and many of the winnings went to the home breeders. Five Red Polled breeders brought sixty-six head of fine specimens of their breed to the fair. Prof. Wayne Dinsmore of Ames was judge and satisfied every exhibitor. Prof. Dinsmore spent a great deal of time in placing the awards and his efforts were much appreciated.

Representing the dairy breeds were the Jerseys and Holsteins. There were forty-one head of Jerseys on the grounds. The former came from three herds and the latter from four. There was only one herd of Jerseys from the State of Iowa. While both the Holstein and Jersey cattle on exhibition were quite up to the standard from the standpoint of quality, they were not from the standpoint of numbers. Breeders of dairy cattle in Iowa do not seem to realize the great advantage to be derived from attending the State Fair. The way to get their cattle before the public is to bring them to the fair and let the farmers see the difference between high class dairy stock and the common stock that is ordinarily used to supply our markets with milk and butter. The milk cow test was a success. Quite a number of cows were entered in this test, and the results secured were very satisfactory. It is to be hoped that the fair management will encourage this feature more in the future.

SWINE.

The swine exhibit was unusually strong. There were over 1,000 Duroc-Jerseys, 1,174 Poland Chinas, 167 Berkshires, 30 Large Yorkshires, and quite a number of Tamworths and Chester Whites. From the interest manifested in the Durocs it was quite evident that this breed is becoming more and more popular. Their prolificacy is evidently interesting the farmers very greatly. The college at Ames offered $600 for Advancer, by Advance, the first prize aged boar, owned by Johnson Bros. & Newkirk and C. W. and Wm. Reed, while F. W. Harding, it was stated, offered $1,000 for the third prize aged boar, Glendale Critic, by Tolstoi, the property of E. Z. Russell. A great many breeders were of the opinion that Glendale Critic should have taken first prize in preference to Advancer. Among the Poland Chinas there were some very fine individuals and some that if they had been for sale would have brought enormous prices. The Berkshires at the show were all of very good quality. There were eight exhibitors of Berkshires, and the different classes were well filled. Considerable more interest was manifested in the Large Yorkshires this year than has ever before been observed. While there were only two exhibitors of Large Yorkshires, viz., Thos. H. Canfield of Lake Park, Minnesota, who is the largest Yorkshire breeder in America, and B. F. Davidson of Menlo, Iowa, competition was nevertheless keen.

SHEEP.

It is quite evident that the high price of mutton and wool, which has prevailed during the past few years, has created great interest in the sheep industry throughout the State of Iowa. All through the judging of the sheep there were a great many farmers present who manifested much interest in the different breeds and classes. As usual, the Shropshires were more numerous than any of the other breeds. Quite a number of Iowa Shropshire breeders were in attendance with very fine flocks. More room will be needed to accommodate the sheep, and it is to be hoped also that better quarters for judging will be provided. The sheep industry will in the future become a very important part of the great live stock industry in the State and sheep breeders should be given all the encouragement possible.

A Typical Crowd at the Iowa State Fair. Live Stock Pavilion in back Ground.

IOWA'S RECORD-BREAKING OPENING.

UNPARALLELED SUCCESS OF THE FIFTY-SECOND ANNUAL STATE FAIR AT DES MOINES.

Breeders' Gazette, Chicago, Illinois.

In Iowa this year of grace they grow corn, think corn, talk corn, eat corn, drink—but, no, in Iowa they drink water. The crop of maize now maturing in the fields of the Hawkeye state must make Hiawatha turn in his grave with sheer admiration. And that things that go with corn to augment the agricultural richness of this mighty commonwealth have been produced in prodigious quantities. It is high noon in farm production. The clock strikes the hour of Iowa's greatest agricultural prosperity. And this was sensationally mirrored in the Fifty-second Annual State Fair.

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Many of its features fall in the record-breaking class. As a whole it was the purple-ribbon winner—the royal championship hue—of its long line of predecessors. Exhibits ran out of the ordinary in nearly all departments. In some sections entries were horizontally scaled down in order to permit a larger representation of exhibitors, and even then accommodations failed. The most gratifying feature is that quality in most instances kept measurably in sight of the betterment in numbers. Some sections were no larger than in former years and perhaps a higher average of merit has been seen in some rings of beef cattle, but explanation of this fact is found in the attraction of the "Closed classes" to the younger and smaller breeders. Competitions limited to the State or to animals bred by the exhibitor are bound to bring out entries which suffer some by comparison with the pick of the land made fit by skillful hands for the hottest competitions.

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It has been in the air that this season is to set new high water marks in the success of our agricultural exhibitions, and nobly does Iowa respond to that prevailing sentiment. The weather played its important part. The best laid plans of fair managers are sometimes drowned out. The scorching heat of a fortnight, moving the great corn crop by leaps and bounds toward a safe maturity, was succeeded by a breath from the pole that swept down in refreshing volume covering the northwest and middle west in revivifying coolness. It was a mighty acrobatic feat performed by the mercury in its tumble from around the 100 mark to the frost line—for light frosts were recorded on Sunday night in a few of the northern sections of the State. Ideal weather followed in the wake of the cool wave, and while it threatened rain about the middle of the week, and the forecast gave promise of showers, nothing more than threats materialized, and the fair swept forward to astonishing success under the smiles of an autumn sky, fanned by breezes that snapped the flags merrily at their poles and aided in keeping nerve-force at the requisite tension to compass the many sights on a congested fair ground.

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But for the smallness of faith of the railroads gate receipts would have been measurably augmented. On Wednesday, and other days, the special excursion trains pulled by station after station loaded to the guards and unable to stop for passengers waiting to be carried to Des Moines. Such a state of affairs is no credit to the "granger roads" which gridiron the State of Iowa. They should have long since learned the temper of the people toward this institution and have profited by past experiences of this kind. We may accept the excuses of rolling stock when freight is delayed in movement, but railroad yards are full of passenger coaches that can be pressed into emergency use. It is this inconsiderateness on the part of railroad traffic managers that is giving birth to the whole brood of suburban lines which will surely make serious inroads on the profits of the steam lines. Over 5,000 people were encamped on the grounds the week through.

We can not, writing before the conclusion of the fair, attempt an accurate summary of the attendance and the receipts, but on the basis of things now accomplished, the Iowa fair managers should be able to look complacently on a profit of more than $40,000 from this exhibition at the end of the week. The attendance on Tuesday was over 60,000. With a continuance of favorable weather the attendance at the close of the week should reach a total of around 200,000.

The poverty of the State Fair, amid all the agricultural fatness of the commonwealth, is painful. Out here in Iowa they have the dam by the mill site, but not the mill. They are long on location, short on equipment. The site of the State Fair is concededly acceptable.

The level stretch, rising to hills of perceptible elevation in the background, affords a setting that is capable of the most impressive treatment. Its beginnings have been made, but today the home of the Iowa State Fair is sadly inadequate. The fair is wearing its out-grown garments of a quarter of a century ago. They are frayed as well as shortened. Under the showers of agricultural prosperity they have shrunken until they no longer clothe the trunk, saying nothing of the extremities, of the body of this institution. It is true that one of the most acceptable live stock pavilions in the country gives amphitheater for the display of this section of the show, but another one its equal in size is sadly needed for the horses. The arena must be divided forenoon for the horses, afternoon for the cattle. And by nine o'clock of each morning not a seat was to be had among the thousands of sittings afforded by this large amphitheater. On some days thousands sought vainly to enter its portals, so great was the congestion within the walls.

Standing in the arena with a state senator, we emphasized the object lesson of the throngs struggling for a glimpse of the live stock under judgment. He replied: "Yes, I see it now, but when the request was made to the legislature for an appropriation for this building, we could not understand why it was needed." It is true that one fine, new brick cattle barn has been erected, but it merely serves to enforce the needs of others by contrast with the old stabling. Never has such an exhibit of horses been gathered on a fair ground, and never has so valuable a collection of stock horses been quartered in such inadequate accommodations. The sheep sheds are mere apologies for housings, while the judging is done under a little stretch of canvas to intercept the suns rays. The swine exhibitors have not even this protection, but show their pigs in alley-ways in pens made by their own hurdles, under the open sky. A few years ago new quarters were provided for the exhibition of swine, but the designers were men of very small faith and built such cramped quarters that resort was necessary to the outdoors. The swine men are making determined demands for adequate housing, and they certainly deserve it, as they annually make here the largest show in the world. Entries considerably exceed 3,000 this year, and yet greater expansion was prevented by lack of quarters. The grandstand is lamentably shrunken beyond the needs of the people who desire to witness the racing and the infield performances. In less than an hour on Wednesday its over 6,000 sittings had been sold. Moreover, under their breath the fair managers express fear of a collapse of the old frame structure. A new steel grandstand is among the imperative needs. That the present is the age of farming by machinery is aptly illustrated in the acres of space covered by live and dead exhibits of farm machinery implements, nearly all in the open and subject to the mercy of the weather.

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These things should not be. A magnificent start has been made in the live stock pavilion, the beautiful new brick agricultural building and the brick barn; but it is only a beginning. An administration building is among the crying needs of the fair grounds equipment, but the officials could worry along a year or two longer in the old and undignified shack which constitutes their headquarters, if the comfort, the convenience and the safety of the exhibits and the fair-goers could be conserved by the erection of the new structures mentioned. Undoubtedly new buildings will greet the eye of the visitor next year. A handsome surplus from the profits of the preceding fairs will go far toward this work, but very liberal appropriations from the legislature are needed. About eight acres of ground lying between the entrance gates and the Rock Island Fair Ground station are under option and that option is almost certain to be closed and this level bit of ground made into a swine department, thus allowing room for the much needed expansion of the horse department.

Iowa farmers do not need a stone house to fall on them to carry conviction of a situation. It is most singular that in this "granger" state, as the easterners call it, with farmers most assuredly in the saddle in halls of legislation, money should longer be denied for the upbuilding of this great exhibit of things agricultural that attracts the attention of farming and commercial America. The present situation is not in consonance with the progressive spirit of Hawkeye farmers. It does not read like a page from the book of their achievements. The State Fair Ground equipment—barring the substantial new buildings—is a libel on the known temper and intelligence of the Iowa farmer. And he can wipe out this reproach if he will.

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The Rock Island Railroad maintained its excellent fair ground service, running trains at frequent intervals that handled hundreds at a trip. There is no happy solution of getting 50,000 people away from a fair ground all in the same half hour, but this steam road meets its obligations in good fashion. The trolley does as well as its natural limitations will permit. It is at best a makeshift in times of great congestion, and is to be avoided when steam cars are available.

The Highland bag pipers made one of the hits of the week. They were enthusiastically received wherever they made their appearance and gave great eclat to the processions of prize-winning horses and ponies that daily filed up the main avenue and down past the grandstand. Liberati's band gave concerts that held the close attention of all the hundreds who could get within hearing out under the shade of the beautiful trees, while in the live stock pavilion the wind had been tempered to the shorn lamb—or the volume of sound from the bandstand had been reduced to the agreeable strains of an orchestra that did not try to oppress with their volume of its music—"enough and not too much," as the Latin had it of old.

The new rest room for women and the emergency hospital up on the hill are notable additions to the highly appreciated equipment of these beautiful grounds. Back over the hills 5,000 people were encamped the week long in tents, and the hillsides were black—or white—with humanity at nearly all hours of the day.

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The Armour six-horse team divided popular attention with the air ship. If aerial navigation advances much farther in its invention we shall presently have a race of people hump-backed in the chest. It was not a spirit of worship that turned eyes heavenward and inclined heads, necks and shoulders so far backward as to threaten the disturbance of the center of gravity. It was the air ship that actually sailed the skies. It did this when the engine worked all right, and the quality of the gasoline was good, and the sun did not contract the gas bag too greatly, and the wind did not blow more than eleven miles an hour. But many thousands saw for the first time a dirigible balloon, under seemingly perfect control of the aeronaut. The first successful flight was made on Monday afternoon from the fair grounds to the State House a couple of miles away, where descent was made. Rising again he circled the great gilded dome of the State House, saluted the statue of peace on the tall monument and then winged his way back to the grounds. A turbine wheel driven by a gasoline engine furnished the motive power and a large fan-like rudder made the balloon as responsive as an ocean liner to her helm.

The six-horse team of gray Percherons, to the yellow and brass-trimmed wagon of the packers, brought eyes to the ground. Farmers had here an object lesson that impressed itself indelibly. They could gather an idea of the kind of horse that brings the big prices on the market and could see why he had to be that kind of a horse. The Armour team was one of the most instructive, as well as one of the most interesting, exhibits of the fair.

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The Iowa State Fair is essentially a farmers' fair. The attendance is palpably from the farm. A great center of urban population is not available from which to draw gate receipts, as in some other states. Des Moines is a growing city, but if attendance from that city were depended on to speed the turnstiles, gate-keepers would not be overly busy. It seems well within the limits of fact to say that a larger percentage of gate receipts come from farmers at this fair than at any other similar State institution. And consequently it measured up to a high degree in its distinctive educational feature. The fair is for the farmer and he knows it and appreciates it. It is one of the events of the year for thousands of Hawkeye agriculturists. The lessons of the judging arena are intently studied. Thousands cling to their seats all day long while the classes are under review, watching earnestly the work and endeavoring to increase their knowledge of approved form and quality. The same story is writ in large letters all over the grounds. The other live stock departments, the machinery field, the agricultural and horticultural building were continually filled with farmers who evidently were seeking instruction as well as entertainment. All in all, this fair is fulfilling in large degree the end whereunto it was established, and its effectiveness as an educational agency should be further enlarged and strengthened by the equipment that is now lacking.

The reverberations of Iowa's opening gun in the fall campaign will not cease their significant echoes until the homeward march is begun from the International at the close of the season.

In the beef cattle department things moved along smoothly under the direction of Ex-Governor S. B. Packard, who has for some years presided acceptably over the destinies of this section. Judges were on duty whose experience qualified them for their work, and while animated discussions arose now and again over close decisions, there was an absence of the open ruction or undertone of discontent which sometimes mars such occasions when judges have not been chosen with sufficient regard for their capabilities.

A catalogue of the horses and cattle aided materially to an understanding and enjoyment of the show. All entries wore numbers in the ring corresponding to their catalogue numbers and for the expenditure of a dime any person could put himself in possession of the key to the ring performances before him. This catalogue presented also a diagram of the grounds, showing the location of all exhibits, and the daily programme of the attractions—the music, racing, and special exhibitions in front of the grandstand. In addition it contained some interesting facts about Des Moines and instructions as to what to see, and how to see it, in that city. It was a most commendable issue.

THE SHORT-HORNS.

Some brilliant demonstrations of the show-yard excellencies which this breed attains were in evidence, projected the more strikingly against a background of exhibits that could not be said to measure up to State fair standards. Indeed, there was noticeable weakness in some of the herds of the more noted exhibitors which does not promise highly for a record-breaking campaign. Exhibitors are finding it more and more difficult to carry on cattle from precocious youth to satisfactory maturity. A show cow that has been made from a show calf, and meanwhile done honest duty in the herd, is not one of the commonest sights on a fair ground. There was some outstanding strength in nearly all classes, and in the bull calves and the younger classes of females the exhibit reached its climax—it suffered somewhat by comparison with former years and with other collections of the breed. The plan of offering classes open only to Iowa breeders has now been in operation for some years and it has undoubtedly increased entries. That it has advanced the standard of quality is another proposition. The Iowa idea is that it encourages home breeders to bring out their cattle for comparison, and that in time they will be encouraged to better efforts. Only experience can test out this idea. Philosophically considered, it will depend altogether on the man—whether he will be content to win a little money in the state class, or be stimulated to try for position in the open class. On one point there can be no difference of opinion—the offer of closed classes at any live stock exhibition invariably and inevitably tends toward a lower average of quality. It was in evidence here.

Editor's Note—It is very evident that the Gazette has failed to thoroughly grasp the idea of offering an Iowa special class...No entries are required in this special class...All state cattle are entered in the open class and when the awarding judges place their ribbons they *go still farther and place as many additional animals from the State, if same ars present, as will take up the cash prizes offered to Iowa cattle. This money is given as a bonus to Iowa breeders, the management taking the broad ground that as a State institution her breeders are entitled to greater consideration in the way of prizes. Again not every young breeder has the means and certainly not the experience of the older breeder in fitting and showing a herd, although he may have some individual animals of excellent quality that are not in show conditions, simply from the lack of experience in the show ring by the breeder. These breeders are slow to come out at first. It is to lend encouragement to these breeders, who are not experienced show men that a bonus is added for State exhibitors. It certainly brings out a larger number of animals and we do not think it tends to lower the quality of the show any more than in a larger show, where a greater number of animals of inferior merit wil be found than will be seen at a smaller show.*

THE BULL CLASSES.

Among the ten aged bulls Whitehall Marshall had no difficulty in placing himself in his accustomed position of precedence. This roan has matured pleasingly into one of the most acceptable show-yard propositions of recent years. In Money Musk, a more compact kind and a blocky soggy chap that has been agreeably in the public eye for several years and here was looking well, the roan from Wisconsin found no mean antagonist. The judge, J. H. Miller, Peru, Indiana, found himself somewhat at variance with sentiment in rating Secret Viscount above King Cumberland, as the latter is deeper, more massive, lower flanked and better in his knees. The former is smoother about his shoulders, however. Somewhat the same difference in types existed between the two head bulls among the two-year-olds. Good Choice is a red roan, lined out about as true as they make them and quite smooth in his turning. Superbus is a more compact bull, deeper and heavier in the hind quarter. Clear the Way is a red and white, very true in shape and smooth in finish, but not so level in his top lines as those set above him. The great front and masculine bearing of The Conqueror were relied on to set him further forward, but probably a lack of balance of hind quarters kept him from higher honors than fourth. Charming character was presented by the front of the white Champion of Lyndale, the blue ribbon yearling, but in width and massiveness in form and flesh, he lacked considerable of being the equal of Cloverburn's Ideal, a roan that suggested somewhat the Abootsburn type, albeit not likely to attain the massiveness of that old champion. His head and horn are not so masculine and finished as the white bull's. It is doubtful if any ring commanded such compliment as the company of senior bull calves. Nearly thirty of them paraded and it was a serious task assigning positions. The white Anoka Sultan owes his prominence to his fine character and scale and sappiness; for more width he must depend on the future. Surely there was much of promise for future shows—and breeding interests—in this remarkable lot of youngsters. There were few of ordinary character among them; nearly all were worthy of an examination in such an arena. The juniors were only a trio.

THE FEMALES OF THE BREED.

The company of aged matrons need not long detain us. Bloom was conspicuously wanting and those toward the top showed plainly the results of the orders of maternity following a prolonged period of show condition. It was another story with the two-year-old heifers, and a pleasing one. Here was comeliness and bloom, correctness of modeling and attractive finish. The leader was the low and well-spread Anoka Broadhooks, a great-fronted and wealthily-fleshed heifer. Beautiful character and sweet femininity as well as remarkable scale characterized the red ribbon heifer Cherry Lass, and the one next in line, Velvet Eyes, is a charming roan of approved type. A great block of a roan with handsome front claimed favor next—Choice Velvet 2d. The yearlings stretched out in long and attractive array. The tops were an altogether agreeable lot, containing bright promise for another year. Missie of Browndale opposed her bulk and shapeliness to good purpose, and her red and white coat was conspicuous at the head of the class until the ribbons were allotted. Her companion in the glory failed somewhat of her in scale and in arch of forerib, but is comely and attractive in her evenness and flesh. The large company of senior calves presented some puzzling questions which are answered for this time by the appended prize list. Anoka Gloster 2d, the head of the class, presented strong claims for her position, but Hampton's Tea Rose was insistent and Victoria's Countess looked good in her company. Compliment may be repeated on the junior heifer calves. Parkdale Queen of Beauty 2d had somewhat the advantage in scale over Cumberland's Countess, next below her on the list, and her touch was superior, but she was closer to the ground and better spread forward, and on these points could have been rated at the top. Model Rose is not inaptly named. There were "comers" among these babies. The remarkable prominence of the Anoka representatives throughout the classes left no doubt as to the disposition of the herd prize.

THE HEREFORDS.

There is considerable of a sameness to the story of the showing of the "white-faces," as the herd of Cargil & McMillan, LaCrosse, Wisconsin, led in most of the classes. As competitors they had W. S. Van Natta & Son, Fowler, Indiana, and S. L. Brook, Macon, Missouri, and strong exhibits were presented by both of them. From the State came quite a number of cattle of acceptable character for the most part, but lacking strength for such competitions. Among these exhibitors were Carrothers Bros., Edmonds, Shade & Co., G. W. Way & Son and David W. Ohl, while Hugh Whiteford and Sheridan Ridgeway of Missouri sent a few entries. Ed J. Taylor, Fremont, Michigan, gave intelligent and prolonged examination to the cattle in rating them.

THE BULLS OF THE BREED.

That Cargill & McMillan bull has come from cover. They wanted nothing said concerning him in advance of his appearance. This was probably because the bull can "speak for himself." He certainly can, and the blue and purple ribbons echo his "speech." Princeps 4th is his name and his fame bids fair to be limited only by his opportunity. Of the most approved type, of a quality that is outstanding, marvelously spread throughout his body, finished in rare fashion on the hind quarters, stretched seemingly to the limit of his skin, this new champion fills well all the traditions of the breed. There is a bit roll on the shoulders and a little weakness in the thighs, but fore and aft he plays quite satisfactorily the championship part. There seemed small choice between the other five. Most of them were on the rugged pattern and wanting in the symmetry that should distinguish a show-yard bull of this breed. Something particularly attractive headed the two-year-olds in Prime Lad 3d, that has developed very pleasingly. He is very straight in his lines and as smooth as an egg from end to end, presenting a charming picture of bloom and finish. Privateer 2d is probably the most massive bull of the breed that has yet been seen in a two-year-old ring, and with all his bulk of frame and flesh he is quite shapely, wanting a little better finish of hind quarter. He certainly is a wonder in his growth and weight. The yearlings were a capital lot, headed by Bonnie Brae 5th, with Prime Lad 9th close up and Discoverer hard after the two of them. In no breed more than the Herefords have prize winning bulls begotten prize-winning progeny. The Prime Lads and the Disturbers have been with us, and now come the Fulfillers. They occupied both leading positions among the senior bull calves—Fulfiller 5th and Fulfiller 3d. The former is darker of coat and more compact—a regular block, while his companion is appreciably of more scale and very ripe in his condition. They are heavy flesh carriers. Prime Lad 25th helped to fill the list with familiar names. Again were these names repeated, when that remarkably ripe and shapely "veal," the junior Fulfiller 7th appeared at the head, followed by Prime Lad 30th, the latter lined out in the straight fashion characteristic of the Prime Lads.

THE FEMALES UNDER JUDGMENT.

It was a fair class of cows, seven in number. Doubtless many would consider this faint praise compared to the merits of the exhibit, but it is bestowed in a critical spirit engendered from long years of acquaintance with the best cows of the breed. Heliotrope and Twilight now rank among the best of the aged matrons forward, and if the former had a better balance of hind parts there would be no need to hark back to old-time winners. She is the same old wonder of rotundity. Twilight is better balanced and carries more scale but less condition. The young cow Rosebud wants some letting down and swelling out. Somewhat out of consonance in type was the big-framed Dora Thorne, but surely one of the real good breeding cows when properly mated, and entitled to her recognition. Each of the two-year-olds from Wisconsin pleased the judge better than the other entries—Miss Donald 17th and Golden Lassie, the sweet head and hogshead-like ribbing gaining the former chief favor. There is a lot of scale to Princess, a sweet head and horn and level top. The yearlings made the largest company of the breed, and by the same token presented the greatest percentage of sub-standard animals. Seventeen is a large ring but the tops of them were very apparent. The Disturbers came well to the front, Lady Ann forcing the fighting with Ethel 2d from Wisconsin. Among the buxom lot of senior heifers a Fulfiller and a Disturber had it out between them, certainly among the most attractive of the age that this breed has presented to us. This story is repeated in its details among the junior calves.

THE ABERDEEN-ANGUS.

Larger exhibits of the breed have been assembled here and greater strength has appeared in some of the classes, but on the whole "doddie" breeders have reason to congratulate themselves on the splendid showing. Among the bulls were a few quite worthy of the breed in its high estate, while the female classes, large as they were in the younger ages, were brimful of Angus bloom. That the grand champion steer of the fair wore black hair and claimed an Angus pedigree was accepted somewhat as a matter of course by the assembled breeders, not that they were by any means weary of such honors but merely accustomed to them. Prof. W. J. Kennedy of Ames, Iowa, placed the winners.

Chas. J. Off of Peoria and A. B. Puterbaugh of Milledgeville represented Illinois in the contests, while the home State sent W. A. McHenry, Denison; A. C. Binnie, Alta; H. J. Hess, Waterloo; P. J. Donohoe, B. F. Fantz, W. J. Miller, Sunnyside Stock Farm; Rosenfeld & Silverly, and F. L. Sullivan.

THE BULL CLASSES.

Whether Jim Delaney is a better show bull than Baden Lad depends on the viewpoint—whether fore or aft. Jim possesses that rare excellence in an Angus bull, a smooth shoulder, and his front is withal quite exceptional, while Baden Lad beats him very palpably in the hind quarter, standing a better balanced bull and stronger where the higher-priced weight is carried. On that account there was some little dissent from the rating of Jim at the fore. Vala's Rosegay, bought too recently to be entered at this fair, was permitted to be shown with the other aged bulls bearing a placard "Not an exhibit." Morning Star 2d played a stellar part among the two-year-olds and in the championship gave Jim Delaney an uneasy moment. This is a very well-grown, thick and meaty bull that should have a future under proper handling. The yearlings came in assorted sizes. It was a toss-up between the compact fellows and some which had been scared a bit in the legs. It was not a particularly prepossessing lot, but undoubtedly its head was properly set on when the compact, wide and well-fleshed Glenfoil Thickset 2d was drawn to the front. Newton King and Star of Denison both showed more strength and length, but the blue ribbon bull was more "tipy," as the sheep breeders say. Prince Pico headed a bunch of senior bull calves that was not overly excellent, a deep chap of good finish. The juniors were few and rather light in condition but straight enough.

AMONG THE FEMALES.

Two daughters of one sire seriously divided the affections of the judge, who besought counsel from Professor Curtiss before casting the die between these charmers. Again it was a finished front that carried the day against a palpably superior hind quarter. Both were imported cows—Snowflake 2d of Kirkbridge and Gussie of Kirkbridge, and Loiterer was the sire. A picture could not be prettier than the blue ribbon cow from her nose to her hooks. Both of them may be a trifle on the small side, but beauty and bloom made ready for the hour were theirs in large measure. Glenfoil Rose, former champion, has grown acceptably, but her maternal ordeals have brushed off the bloom. Likewise with Blackbird of Favorite 2d, a winner of last year. Pity that the honesty of a cow, proved by reproduction, should stand against her in the arena, but there is no appeal from the logic which rigidly selects those most typical in bloom as well as form and flesh. The two-year-olds had them all clustered about, feasting their eyes on the dusky loveliness. Eileen Lass bears a trifle evidence of lingering at the meal tub, but her place was up top. Seventeen yearlings stretched out in a long line of finished form, displaying the richness of the breed in the fitted young entries. It was again a case of show bulls begetting winners, as Western Star and Heather Lad of Emerson 2d landed their representatives on the list. Quality persisted in the remaining classes, the senior heifers displaying some precocious specimens of the breed.

THE GALLOWAYS.

It was a small show of Galloways. Only one herd was in proper shape for the show-yard. This one gained most of the top prizes. With better fitting a number of the entries that fell low in the list would have scored toward the top. That one exhibitor should have most of his cattle in nice fix would seem to prove that other exhibitors might do as well if they got busy at the right time in the right way. An apologetic display is bad advertising for a breed and for the breeder who makes it.

Pat Ryan of Red Cloud continues to improve. He is a full-fledged show bull from end to end and bottom to top. His progress toward this eminence has been watched with interest by show-ring students of the past two years. Championship honors at this fair were easy of attainment by him. Lady Charlotte from the same herd made a popular female champion. She is a low-down, deeply-fleshed heifer of beautiful pattern.

G. W. Lindsey of Nebraska, J. E. Bales of Iowa and George B. Buck, A. F. Craymer and C. S. Hechtner of Illinois contributed the entries. A. M. Thompson of Nashua, Missouri, tied the ribbons.

THE POLLED DURHAMS.

Breeders of Polled Durhams responded in fine fashion to the second invitation of the Iowa Fair. Last year was the first time that a classification has been provided for Polled Durhams at this fair. It is an indication of the progress of this hornless type of Shorthorn that the classification was repeated. It drew out a thoroughly creditable exhibit. A. C. Wood & Sons, Pendleton, Indiana; Shaver & Deuker, Kalona, Iowa; F. F. Failor and the Ardmore Stock Farm, Holstein, Iowa, were the exhibitors. In Roan Hero, champion of the show, Shaver & Deuker have one of the most acceptable bulls of the breed. He is low-set, even-lined, smooth and compact, well fleshed and in flash bloom. Royal Flora, from the same herd, is of much the same popular pattern. She is smooth and well balanced, an outstanding show-yard animal. Victoria Lady, a red and white yearling, fills the eye. She is a beauty. Level-topped, deep, low-down and showing a wonderful spread of forerib and breadth of loin, neatly molded in front and about the head, this heifer is a very high type. E. T. Davis of Iowa City, Iowa, made the awards.

THE RED POLLS.

The exhibit of Red Polls was the largest ever seen at a State fair. Moreover, it was equally good in quality. The breed has never assembled in one show-yard so many high class animals as were adjudicated on this occasion by Prof. Wayne Dinsmore of the Iowa Agricultural College. With the exception of the two-year-old bull class there was edged competition in each ring, especially in the female classes. While there was more or less difference in type as idealized by the various exhibitors the dual-purpose kind predominated, and there were several exceptionally good ones. Saucy, for example, the champion cow, is about as good an illustration of the double decker sort as we have seen. She has the scale of a beef cow and the udder of a dairy cow. Irwin, the champion bull, also is closely patterned after the beef-and-milk beast. It would be difficult to find a better pair than this. They afford a valuable object lesson for breeders. Many of the cattle were not properly conditioned. If they had been not a few would have been placed higher in the list. Prof. Dinsmore, who has judged this breed for several years in succession at Des Moines and at the International did a good piece of discriminating work in rating the entries. Exhibitors are thus listed: G. W. Coleman, Webster City, Iowa; Geo. B. Buck of Illinois, A. P. Arp, B. A. Samuelson and F. J. Clouss of Iowa and W. S. Hill of South Dakota.

THE SHOW OF STEERS.

The exhibit of steers attracted some attention as a number of bullocks were forward that will have to be reckoned with at the International. It was largely a black hue that affairs assumed in the grades and crosses, as all the first prizes fell to the Angus, and also the grand championship of the show. This was won by W. J. Miller's Dutch Lad, the first prize two-year-old among the Aberdeen Angus. The grand champion herd prize fell to Cargill & McMillan's Herefords. Dutch Lad is decidedly on the show steer order and if he feeds kindly until December he will be quite up to International standards. Some wonders of thickness and smoothness are included in the Cargill & McMillan exhibit of Herefords.

THE DAIRY BREEDS.

THE HOLSTEIN-FRIESIANS.

Three herds of Holstein-Friesians made a very satisfactory exhibit, and F. H. Scribner, Rosendale, Wisconsin, placed the awards satisfactorily. Jewel of Home Farm headed the aged bulls and as easily won the championship. He is showing in better condition than last year, although he is a little lame in the feet. All the Home Farm entries shown by Barney & Co. were in nice bloom, and the exhibit as a whole reflected credit on the herdsmen. In Maryke 3d Gerben 4th Mr. Stone showed the champion female, a cow of outstanding dairy form and superb quality. The aged cow class was perhaps the strongest of the show. It embraced seven entries. In the two-year-old heifers McKay Bros. presented a beautiful entry in Dubarry DeKol, but Princess Pel De Kol was preferred for first place. Both are capital types, showing fine development of milk veins and lots of quality. Six heifer calves were a strong lot, the Stone entry taking premier position. Exhibitors: W. B. Barney & Co., Hampton, Iowa; C. F. Stone of Kansas, McKay Bros. of Iowa.

THE JERSEYS.

Jerseys were a most commendable lot, though each class showed some that were not in good form. Hunter & Smith had most of the blue ribbon winners, and their cattle were brought out in beautiful finish. They gained both championships. Belmont's Champion Lad is a quality sort and a capital handler. Zelaya's Fancy Lad won second. The judges thought him too meaty. He is a strong-backed, low-set bull, with bull character from end to end. Eleven aged cows illustrated a variety of types, but the good ones outnumbered the other kind. It is not often that a better lot of matrons is seen. An imported cow headed the list. Jersey Darymaid's udder and milk machinery scored near the limit of points, according to the judge, and when she was milked out he was even more favorably impressed with her. In two-year-old heifers the second prize entry would have gained first place quite handily if she had been fresh. Her successful rival has produced and given susbtantial proof of her dairy excellence. The judge favored her for this reason. There were no hair-splitting contests in the show. In most cases each winner was an easy winner except as to some of the smaller prizes. Mrs. S. B. Thomas of Missouri, Hunter & Smith of Nebraska, Dixon & Deaner of Wisconsin and Geo. S. Redhead of Iowa were the exhibitors.

IN THE SWINE PENS.

The hog show at the Iowa State Fair assumes larger proportions each year. It was big last year; it was materially larger last week. Evidently the numerical strength of this department is fixed only by the amount of space available. Several hundred entries were rejected this year on account of inadequate accommodations for housing them. The liberality with which breeders of Iowa in particular and of several other States in general patronize the fair this year might inspire the comment that the country is full of hogs, notwithstanding the fact that a shortage of about 50 per cent in last spring's pig crop has been numerously reported. Hog stocks undoubtedly have increased substantially in the corn belt in recent years, and the multiplication in numbers has probably not exceeded the improvement in blood, due to the diffusion of pure-bred boars. The value of pure blood in improving the pork-making qualities of the common stock has been so thoroughly demonstrated in the corn country that breeders of pedigreed hogs have enjoyed profitable prices for all they have offered for sale. Never has the demand been keener than at present, judging from the rapidity with which prize winners and others sold during the fair at good prices. Breeders are in fine spirits as to the future of the business, which rests on a solid foundation, and the outlook is distinctly optimistic. We have had a lot of hog days in recent years, and they do not promise soon to abate. This is an abiding faith among the leading breeders, and it is reflected in the operations of hundreds of farmers who are starting in pure-breds.

The hog has cancelled the mortgages on Iowa farms and been perhaps the most important factor in the State's prosperity. It, therefore, seems fitting that he should be generously recognized at the State Fair. Whatever he has deserved in this regard has been accorded him, but more is coming.

About 1,100 Poland Chinas, 1,000 Duroc-Jerseys, 467 Chester Whites, 167 Berkshires, 45 Large Yorkshires and 27 Tamworths were shown. In round numbers there were 215 exhibitors. Of these 190 were from Iowa. Nebraska, Missouri, Ohio, Illinois, Indiana, Wisconsin and Minnesota also were represented. It will be seen that it was an Iowa show. Throughout, in fact, it was an Iowa fair, home exhibits being in large majority in every department. On the whole the collection of hogs was superior to that shown last year, although there was a considerable number of entries that, being intended primarily for sale, were not properly fitted for the show. Indeed, many of them could not by any stretch of charity be considered show hogs. The entries of experienced showmen were for the most part nicely fitted and many beginners showed hogs in beautiful bloom. It was an exhibit of peculiar interest to the student of our swine stocks.

A number of Iowa breeders wanted three judges for each of the principal breeds, but the fair management did not see the necessity for this old system of judging, and turned down the petition. A compromise was effected by appointing two judges for each of four breeds, one to serve in an advisory capacity. Ed Klever, Bloomingsburg, Ohio, judged the Poland Chinas, W. E. Spicer acted as consulting judge. In Berkshires the order was reversed. Good work was done in both breeds. W. Z. Swallow, Waukee, Iowa, and L. H. Roberts, Paton, Iowa, judged the Chester Whites and Duroc-Jerseys. Prof. Thos. Shaw, St. Anthony Park, Minn., passed on Large Yorkshires and Tamworths.

THE POLAND CHINAS.

The strongest class of Poland Chinas was that of junior yearling boars, consisting of nearly forty entries. Uniformity of type and attractive condition distinguished the collection. It has been many a day since so many good ones competed in one class. The get of boar class was also noteworthy. Entries were numerous in each contest, and it took good ones to win. Yearling sows were the features of last year's show; this year they were very much below the standard then set. Most of them were overfitted. Thirty were shown. In the older classes there was a lack of quality which was fairly well off-set by the remarkable strength of the pig. The pigs were not so well developed, however, as they were last year, owing to the earlier date of showing. It was a contest between Iowa and Illinois for the championships. Illinois has been gaining these coveted honors with considerable regularity at Des Moines. A repetition of the performance was strenuously worked for, but Iowa won the boar championship and Illinois took the other one. Keen interest entered in these contests. For the female purple, John Francis & Son, New Lenox, Illinois, had a very handy winner in Director Perfection, but the rub for the boar champinoship was harder, and it was not a universally popular decision which gave the prize to S. P's. Perfection, shown by S. P. Chiles of Iowa. It was a capital pair that gained these honors. The Francis sow is altogether one of the most satisfactory propositions seen in recent years. Smooth, deep and broad, correct on her feet, chuck full of quality and nicely marked, this sow was licensed to achieve distinction in the strong ring. The champion boar is an admirable type, compact and smooth. Perfection Heart 2nd, shown by F. L. Brumback of Illinois, was his strongest rival. Each animal had many friends for the honor but the judge preferred the younger hog. Mrs. S. B. Thomas of Missouri, had the first prize aged boar, a very smooth one for his age, and with unusual strength of bone.

DUROC JERSEYS.

Duroc Jerseys showed in larger number than ever before at Des Moines. This breed is making rapid strides in the corn belt. It was a strong showing that its adherents put up on this occasion. Compared with previous exhibits it was distinctly superior, younger class showing in number of outstanding entries. Refinement of the breed is being effected. The Duroc-Jersey of today differs to his advantage from his progenitors of a few years ago. No longer is the "cat ham" comment passed on a modern hog of this breed. Iowa and Nebraska breeders presented an exhibit that would compare favorably with any in the department. It was big numerically and of uniform excellence.

The champion boar appeared in the yearling class. Crimson Wonder Again, shown by H. S. Allen of Iowa, easily gained first place in the class and was a strong card for the purple, which was awarded him. Royal Blossom, exhibited by Edmunds, Shade & Company of Iowa, made a most acceptable champion sow. The get show was a sensation.

THE CHESTER WHITES.

Chester White breeders have begun to exhibit generously at Des Moines. Last year they gave a good show. It was distanced this time. They presented nearly 500 entries and the collection as a whole was of good quality and finish. Men who have been breeding Chester Whites for years were among the competitors for the prizes. Every class afforded an excellent show and keen rivalry. Humbert & White of Iowa, brought out a full herd in beautiful condition and secured a goodly number of the top prizes; also the female championship.

THE BERKSHIRES.

Berkshires did not make a large show, but there were some strong entries. Harris & McMahan, Lamine, Missouri, and Etzler & Moses, Decatur, Indiana, had the best filled herds, and won most of the prizes, the former firm taking most of the blues and both championships. Its hogs were not in a high state of flesh, but they were in fine bloom, making an excellent impression. The champion sow is one of the best Berkshires that has been seen in a show yard. She has a typical head, a broad, wide back, deep middle, full quarters, straight pasterns and beautiful finish and style. The champion boar from the Sunnyside herd is of a similar pattern. Etzler & Moses made an especially strong exhibit in the pig classes.

LARGE YORKSHIRES AND TAMWORTHS.

Thomas H. Canfield, Lake Park, Minnesota, and B. F. Davidson of Iowa, were the exhibitors of Large Yorkshires, each showing some good types in attractive fix. Frank Thornber of Illinois and C. C. Roup of Iowa, exhibited some good Tamworths.

THE SHOW OF SHEEP.

The exhibit of sheep, while not comparable with the great shows of horses, cattle and hogs, was yet in many respects the best ever seen in Iowa. In point of number the middle-wooled breeds made the strongest showing, Hampshires, Oxfords, Shropshires, Southdowns and Cheviots all being exhibited, but no Cheviots competed for prizes. In long-wools, Lincolns and Cotswolds were the only breeds shown, but F. W. Harding and Lewis Bros. showed strong flocks of Cotswolds. A. A. Arnold & Sons of Wisconsin, were the only exhibitors of Lincolns. The show of fine-wools was pronounced by many to be the best ever seen at Des Moines. Rambouillets and American Merinos were the only breeds exhibited. The exhibit as a whole was of good quality and well fitted with only a small percentage of plain or inferior sheep. Wisconsin flocks carried away most of the prizes in the open classes and also in the association special classes.

Classes were provided for Iowa Shropshires and Oxfords, bred and owned by exhibitor. The showing in these classes was strong among the lambs, especially ewe lambs, while the older classes were not so strong.

SHROPSHIRES.

The Srhropshire exhibit was by far the largest and strongest. In the open classes McKerrow & Sons and F. W. Harding secured most of the prizes, with Chandler Bros., Renk Bros. and W. S. Dixon also in the money. In the aged classes McKerrow & Sons secured both firsts, but both championships went to Harding on yearling ram and yearling ewe. In the American Shropshire Association Specials honors were well divided, excepting as to the championships, which went to McKerrow & Sons.

The Iowa Specials confined to Iowa-bred and owned sheep brought out a large showing, with Plumly Bros. rather in the lead, especially in ewe classes. W. R. Weaver, Canton, Illinois, tied the ribbons. Exhibitors were F. W. Harding, Waukehsa, Wisconsin; Geo. McKerrow & Sons, Pewaukee, Wisconsin; Chandler Bros., Kellerton, Iowa; W. S. Dixon, of Wisconsin; F. P. McAdoo, of Iowa; Renk Bros., Sun Prairie, Wisconsin; Plumly Bros., of Iowa.

SOUTHDOWNS.

In the Southdowns only two flocks were represented. McKerrow & Sons were in evidence with a strong collection, while W. S. Dixon of Wisconsin, also showed a few. McKerrow won all the prizes except third on aged ewe, which went to Dixon and Mr. Weaver rated the candidates.

OXFORDS.

The Oxford exhibit consisted of Geo. McKerrow & Sons' flock and that of Graham Bros. of Iowa. The McKerrow sheep were more "typy" and in higher show shape, and won practically all the prizes in the open classes. Graham Bros. received all prizes shown for in the Iowa Specials, having no competition. W. R. Weaver made the awards.

HAMPSHIRES.

Renk Bros. of Wisconsin showed a flock of Hampshires and were awarded first and second prizes in all classes in which they had entries. Their exhibit was of uniform type and well fitted.

LINCOLNS.

Alex. A. Arnold of Wisconsin showed a full flock of Lincolns of good type and Lincoln characteristics. This flock received all prizes awarded to Lincolns, there being no other flock exhibited.

COTSWOLDS.

Some good Cotswolds were shown. F. W. Harding was on hand with a great show of the big fellows and shared the honors with Lewis Bros. of Illinois. Harding was especially strong in yearling ewe and ram lambs. His yearling won the female championship handily, but Lewis Bros'. broad-backed three-year-old ram was not to be defeated for champion honors in the ram class. W. R. Weaver awarded the prizes.

RAMBOUILLETS AND MERINOS.

The exhibit of fine-wools was the strongest ever shown at Des Moines. Harding was out with a strong flock of Rambouillets which came in for a number of firsts and carried away the ram champion honors. W. S. Dixon showed the champion Rambouillet ewe, a "typy" one of excellent fleece. In the American, Spanish and Delaine classes honors were well divided between Green, Moore and Dixon. Exhibitors of Rambouilletts were F. W. Harding, Waukesha, Wisconsin; E. M. Moore of Michigan; W. S. Dixon of Wisconsin.

Merino exhibitors were F. M. Moore, Michigan; A. E. Green of Michigan, W. S. Dixon of Wisconsin. M. W. Wheeler, Blakesburg, Iowa, tied the ribbons in a satisfactory manner.

HORSES IN THE ARENA.

The horseless age is farthest from the dreams of the Iowa farmer. He fears not the chug-chug of the motor car. Unmoved by the threats of mechanical invention, and with his eyes glued to the importunate demands of the market places, he is stocking his farm with horses, and enlarging his breeding operations. His interest seems to center in the draft horse, but he is by no means blinded to the beauty of the coacher, as out of Iowa have come many high-priced products of the blood of the imported coach sires. And the road horse has his attractions, as was demonstrated when an old-time Illinois exhibitor, who has made good in many warm competition for a score of years, retired with a string of ribbons chiefly red in color, having been beaten in every class after the aged stallion by individual exhibitors with an animal in a class. In the making of prime drafters the Hawkeye State has long enjoyed a superior reputation, the blood of the imported stallions of a quarter of a century ago adding untold wealth to the stock interests of the State. And they are at it again hammer and tongs. The big importers are still operating in the State, new men are entering the industry, and some of the most extensive importers of other states find it advantageous to set forth the merits of their stables to the thousands of Iowa farmers who annually gather at this State Fair.

Speaking by the card the exhibit of horses was 50 per cent larger than last year. The horses shown in hand were judged in the arena, while the harness horses had to take to the track in front of the grand stand, so crowded was the arena. The keenest interest was manifested in the draft horses, and a convincing demonstration of the development of the breeding interest in this country was evidenced in the exhibit of mares.

THE PERCHERONS.

Not in years—some say never—was such an exhibit of Percherons seen. Nineteen different exhibitors were represented and fifteen of them were Iowa men. This is the essence of the Percheron story. Four classes had been added to the list of the encouragement of State breeders—one for stallions over three years old, one for stallions under three years old, one for mares over three years old and one for mares under three years old, all to be bred by exhibitor. And the increased entries encouraged by these classes gave evidence of creditable production on Iowa farms. Nearly all the young home-bred stallions were of useful character, only a few of them falling without that class. Evidently the foundation has been laid for the production of very satisfactory and profitable work in the production of pedigreed Percherons.

McLaughlin Bros., Columbus, Ohio, H. G. McMillan, Cedar Rapids, Iowa, Lew W. Cochrane, Crawfordsville, Indiana, Finch Bros., Verona, Illinois, Frank Iams, St. Paul, Nebraska, and W. L. DeClow, Cedar Rapids, Iowa, were among the best known exhibitors, while W. W. Garner, S. B. Frey, F. O. Nutting & Son and others got recognition.

The horse department was in charge of Prof. C. F. Curtiss of Ames, and his bench of judges had been chosen with discrimination. Robert Graham of Claremont, Ontario, had accepted an invitation to work with Professor Kennedy on Percherons and to judge the Clydesdales, but he failed to report, and Professor Kennedy took the Percherons single handed.

Among the sixteen aged stallions pride of place was cheerfully accorded to McLaughlin Bros.' very dark grey Etradegant, a son of Bon Courage, which had been saved over and made up for show as a four-year-old without previous experience in the arena. He tips more than a ton, but will not make what is called a big one, and yet in the perfection of his shape, in his fidelity to the real Percheron type and in rare underpinning and grand block he ranks among the sensations of the latter day. The carriage and somewhat of the action of a coach horse are his, and he is altogether a rare combination of power with refinement. H. G. McMillan bought him, but only on condition that this grand stallion would go to the Iowa Agricultural College for a year under lease. The gray Albert, that rugged big-boned stallion that won at the International, has come on nicely and was looking well the part of the heavier type of the breed. The black Montelle, somewhat on the "Dutchman's horse" order, low to the grounds and wide-set, with grand bone and good feet, stood third and seemed worthy of the recognition. Trallala, a very massive black from the Iams' stables, came just outside the money, as only three prizes were given, but commendation was given to two others in each ring. The fifth in line was McLaughlin's black Bibi, a French winner, projected on a large scale, an upstanding sort with very heavy bone.

There was plenty of choice among the three-year-olds, and the iron gray Dimitri finally landed at the top of the heap of twenty, carrying the McLaughlin colors. This is a short-backed shapely gray, with powerful stifles, well-set ankles and exceptionally good forelegs, and a fair way of going. More than one man inside the arena was in love with McLaughlin's black Mouton for this position, a grand-crested, low, heavy muscled horse with remarkably flat and heavy bone, but the judge did not like the way he went. Coco came in second for Nutting & Son, a showy horse, near the ground, standing on broad flat bone, especially good in the foreleg, and very nicely modeled over the hips and croup.

The black Harrison from Nebraska came third, a powerful horse, highly conditioned, with strong shoulders and level rump. The round-barreled, thick-set Daniel was commended for Garner and also Mr. McMillan's home-bred gray Parsifal, a toppy horse of even shape and good bone.

Another score of entries paraded, and among these two-year-olds were a lot of home-bred colts that bespoke intelligent breeding. All were well grown but some of them showed lack of condition and handling, while others had been fitted to a degree that would make the professional groom look well to his laurels. Among the latter was the dark gray Lerida 2nd, bred by C. A. Saunders, and got by a horse that for nearly twenty years left "barrels of money" on his farm and in his neighborhood. Barring a bit of shortness in the pastern there is little to criticise about this colt. He may never make a great big one but he is about as beautiful as they build them, with hind quarters that are altogether out of the ordinary in their modeling, and bone of exceptional quantity and quality. He was green at the halter and did not walk or trot as well as some of the others and on that account some would have set him back; but when they saw him the Ohio exhibitors had occasion to regret that they left their strongest two-year-olds at home. Their black Dragon, more upstanding and a great horse forward in neck, shoulders, heart, ribs and forelegs, could easily outstep the Iowa colt, but the perfect shape and finish of the latter won him premier position. Renvier, an iron-gray, had third ticket for McMillan—a Calypso colt low and stocky, with big arms and strong stifles. Dewey's Image, from the Nutting stalls, might have been up a peg higher, as he is a soggy sort; he carried more flesh but his bone was not quite so heavy.

The yearlings numbered among them evidently several fall colts. The black Vaporeux, from Ohio, was the most massive of the lot and his maturity was quite pronounced. He will make a stallion of remarkable size and heft of bone, but he failed somewhat in his rump and hind legs compared with Cochrane's black Amerigo, a very growthy black, of good head and level top. Another Calypso came on the list—the black Diaz that had not been forced for show but presented a well-grown frame of fairly level shape and well set hind legs.

THE CLYDESDALES.

An exhibit of remarkable excellence brought this Scotch breed sharply home to the attention of farmers at this fair. Not in years at a State Fair has so much of outstanding merit been set before the public. McLay Bros. sent their best from Janesville, Wisconsin, and A. G. Soderberg proved the unusual excellence of his new importations. August Post, Moulton, Iowa; W. W. Garner and T. D. Tice & Son of Iowa were among the exhibitors, while Alexander Calder represented Nebraska. The ring of aged stallions numbered thirteen, and it was of notable excellence. The entries furnished an admirable illustration of the ideals of those breeders who seek to unite choice quality with draft horse bulk. The winner was found in Soderberg's Clan Stewart, a son of Prince Alexander, a toppy stallion on clean legs with a profusion of feather and a bright way of going. When he has acquired more condition he will be stoutly equipped for any ring. Prince Punctual from Janesville, a son of Handsome Prince, gave him a hard rub. With some judges this bay stallion would have led, as he is of superior substance, a level-topped horse, well ribbed up and standing over a lot of ground, with round hoof heads and beautiful bones and joints, although somewhat stripped of feather. Captor, a bay with big blaze, a fair shape and good legs, ornamented with a profusion of feather, stood third, according to the rating given by R. B. Ogilvie, Chicago, Secretary of the American Clydesdale Association. Baron's Hope, a son of Baron's Pride, a compact, round-turned horse with great feather and a beautiful hind leg, was commended for Soderberg.

The three-year-old company of stallions deserved enthusiastic praise. Seven asked preferment, and a judge could have picked his winners blind-folded without fear of getting one of inferior character. The blaze-faced brown Ethelbert, by Baron Briton, that finally found way to the front for Soderberg is not a large one, but a toppy, short-backed, shapely stallion, good in fore rib and shoulder, with open hoof heads and supple "kits." The same exhibitor's Tartan, winner at the International, moved into second with his neat way of going and his compact and well-furnished body. The bulky, well-balanced bay St. Columbia, bare of hair but fairly good at the ground, with a clean way of stepping, came third for McLays'.

Black Douglas, with his exceptionally good pasterns and hoof heads, and Black Acme had both tickets among the two-year-olds for Soderberg, leaving third to McLays' Cavalier, Frank P. Skeleton's William McKinley and Jos. Pedley's King Robert. The latter was suffering from a slight bruise which may have set him down.

THE SHIRES.

Most of the show of Shires came from outside the State, contributors being Truman's Pioneer Stud Farm, Bushnell, Illinois; Finch Bros., Verona, Illinois; A. G. Soderberg, Osco, Illinois, and Lew Cochrane, Crawfordsville, Indiana. From a quartette of slashing big and powerful stallions shown from Bushnell the winners were picked, although several other entries were forward. The tall and massive Umberslade Victor, three times a winner at the London show, was passed over by the judge, R. B. Ogilvie, Chicago, who had more respect for American than English standards in drafting out his ribbon horses. He found three big ones and good ones in Highland Laddie and Ethelred 3d, a pair of dark browns, and Duke Albert, a big, powerful shapely bay that looked like the best of the lot if he had been a little fresher. He had come off a season in Idaho and was somewhat worn with his work and the long journey. The blue ribbon horse is a thickset stallion, close enough to the ground, well muscled and a splendid walker. Ethelred presents the width of a wagon, well rounded into attractive form and has clean bone.

Much of the modern type of Shire is exemplified in the winning three-year-old from the Pioneer stud—the bay Norman Emperor. He is bulky enough and stands on fine flat bone with silky feather and he is an easy goer at the lead rein. He came first, Russell Sage was second for Cochrane, and Barnfield All Fours, a thin but fine stepping black, was third for Finch Bros. The two-year-old winner from the Truman stalls was rightly enough named Gaiety Banker. He is a cocky chap of the quality kind, a colt of beautiful quality but hardly so heavy of bone as the ordinary run of Shires. The big thick chestnut John D., shown by Cochrane, came second, much heavier in body and in bone, but coarser in his joints. Verona Bounder, from the Finch stalls, brought up the winners, a big, well-topped bay colt. The blocky, round-built, good-going Noble King led the yearlings for Soderberg, followed by Finchs' Bounder and Finchs' Buster Brown.

BELGIANS.

R. B. Ogilvie was listed as the judge of Belgians, but owing to illness on the day when this class was called he was unable to serve and John G. Truman, Bushnell, Illinois; Graham Galbraith, Janesville, Wisconsin, and S. B. Frey, Ames, Iowa, were appointed to pass on this breed. McLaughlin Bros., Columbus, Ohio; W. L. DeClow, Cedar Rapids, Iowa; Finch Bros., Verona and Joliet, Illinois; Henry Lefebure, Fairfax, Iowa, and W. W. Garner of Iowa were the exhibitors. It was altogether a very good show of this draft breed, the aged stallions making an especially impressive display. Mr. DeClow had some highly creditable entries in the aged, three-year-old and two-year-old stallion classes. Mr. Lefebure gained most of the prizes without competition in the remaining rings. Mr. Truman and Mr. Galbraith were assisted by Mr. Frey in but one class, that for aged stallions.

THE SADDLE HORSES.

Some little interest was aroused in the saddle horse exhibit, and a number of capital specimens of the gaited variety were present. The entries were larger than the exhibits. Of the eight aged stallions catalogued only three reported—Wallace Estill's handsome black McDonald, shown by Tom Bass, and two sons of Rex Denmark—the black Reckless Squirrel, owned by Tom H. Jones, and brown Cleburn, owned by Ed Clapper. All of them came from Missouri. There was something of a family resemblance between the two blacks, although the Rex McDonald horse was palpably the superior of Reckless Squirrel in range and suppleness of neck, and a more graceful pattern throughout. He was put and kept in form through all his work, while Reckless Squirrel spent most of his time with nose in air fighting the bit, evidently having failed to learn the first principle of a saddle horse education. He is lower to the ground and has more substance than McDonald and clearly outpointed him on the flat-foot walk. The decision which placed Reckless Squirrel first partook of the character of the old-time western estimates when the manners of a saddle horse and the form in which he did his work counted not at all with the judge. The rider of Reckless Squirrel did his best to cover his horse's withers with the saddle. Cleburne Denmark lacked the finish of the other two and never knew what it was to go in form.

OTHER BREEDS OF HORSES.

In the classes for English Coach breeds, Cleveland Bays and Hackneys, Truman's Pioneer Stud Farm, Bushnell, Illinois, was awarded all the prizes for which it showed, W. A. Dobson making the awards. This firm entered Hackneys that gave capital exhibitions of high action and showed the style, carriage and quality for which the breed is noted.

SHETLAND PONIES.

Owing to some radical changes in the classification for Shetlands there was not as large a show as proved a strong drawing feature last year. The prize list was materially reduced. Several large exhibitors felt that they could not afford to ship out for the meager premiums listed. The little folk last year at the fair thronged the pavilion when the ponies were being judged, and the exhibit was attractive and interesting to hundreds of adult visitors besides. Some very good ponies were out. C. E. Alexander, Cassidy & Thompson, W. W. Garner, John Donhowe, W. T. Roberts, and H. L. Anderson of Iowa were exhibitors. Dr. J. I. Gibson of Des Moines tied the ribbons.

Woman's Rest Building and Emergency Hospital, Iowa State Fair Ground.

HAWKEYE STATE FAIR A RECORD-BREAKER.

DEPARTMENTS FILLED TO OVERFLOWING WITH EXHIBITS OF THE FINEST QUALITY, WHICH ARE VIEWED BY THOUSANDS.

Twentieth Century Farmer, Omaha, Nebraska.

Iowa is a great State. Its people are a great people and they have a way of showing their greatness to the rest of the world. The Iowa State Fair last week eclipsed all others in a general way. Its attendance was greater than ever before. The grounds were filled to overflowing with the various exhibits and accessories that go to make a great State fair. The live stock department, which is, of course, the chief point of interest, led all previous exhibits. The swine section brought together a total of 2,868 hogs of all the various breed. New classes had been provided this year for Tamworths and Yorkshires, and there were excellent exhibits of these two breeds, as well as of the others. Having in view the position as the leading hog show of the United States, which has been proudly held by the Iowa State Fair, it could scarcely be expected that any marked improvement in general excellence could be noted. It was good enough, however, to hold up the reputation of the greatest show on earth. Breeders invariably come with their best and meet competition of the warmest sort. Premiums were widely distributed and no one breeder had a cinch on more ribbons than he could carry away. The Duroc-Jersey department was a center of interest, this breed having sent forward the second largest number, 1,001 head, as against the Poland Chinas, who still retained the lead at 1,162. Intense interest followed all the show rings in the red hogs, and it is to the credit of the fair management that Messrs. Roberts and Swallow, who passed upon the exhibits, afforded universal satisfaction throughout the entire list. The Tamworth, which has heretofore been considered a sort of joke by the lard hog producers, made a long step toward public popularity at this show by producing a more attractive lot of the breed than have ever before been put onto these grounds.

SENSATIONAL IOWA BRED HORSES.

The horse show was widely talked of, because it crowded all the horse barn facilities, overflowed into the cattle barns and into the race horse barns and called for still further accommodations under tents and temporary sheds. As usual, it was an importer's show, several importations of forty or fifty head just over, having come almost direct from the seaboard to this show. But they were good ones throughout and gave a good deal of promise for the horse breeding interests of the west. With all their excellence, however, it was the sensational two-year-old Percheron bred by C. A. Saunders of Manilla, Iowa, that captured first prize in class against a great ring that included first prize winners at the Paris exposition. This horse was Lerida 2d, a very dark, almost black, gray, that was so well appreciated that Professor Curtiss of the Iowa Agricultural College bargained for him before the show for his own farm at $1,000. There were, as usual, Percherons, Belgians, Clydes, Shires, coachers of the various breeds, jacks, Shetland ponies and so on down through the entire list, practically all classes being full. So great was the exhibit that not until late on Friday night, right up to the hour of breaking up the fair, was the last prize awarded.

The cattle show was not a phenomenal one in any breed. In fact, it lacked numbers as compared with other years. It lacked quality in the proportion that it has existed at previous shows. Fewer of the big professional herds were represented, and these did not seem to attract the same attention as in other years. However, it was a representative show, including all the beef breeds except Brown Swiss. The dairy barn suffered in comparison with other years, there being but a few herds of Holsteins and Jerseys in competition.

The show of sheep in Iowa, it seems, has been gradually decreasing in numbers for several years. It was scarcely up to what should be expected at Des Moines and certainly far below the possibilities of the location. We find, on interviewing local breeders, that the classifications have for some time been unsatisfactory and that, were they really revised, there would be a much greater showing of home-bred sheep by Iowa breeders.

The amusements provided at the Iowa State Fair are certainly in the advance of those of all other fairs. They are practically beyond criticism in all departments. A few of the smaller shows that were permitted to enter the grounds seemed not to be of an objectionable order, but it was a noticeable fact that the legitimate points of interest of the fair were given the attention of visitors rather than the shows.

THE AIRSHIP A GREAT ATTRACTION.

The airship was a great thing. Everybody looked at it and everybody went to see it, whether it was in the tent, where an admission was charged to obtain a closer view of it, or whether it was flying in the air above. The airship is not an airship at all. It is a great, big cabbage worm shaped balloon, turned over on its side, with a very light, long frame attached below it on which the operator rode in what seemed to be a very dangerous situation. The cabbage worm gas bag was the means of getting the whole thing up in the air and it was propelled by a small gasoline engine, with a paddle-wheel propeller at one end of the long frame hung below the balloon, the rudder, or steering device, being located at the other end. It was a nice demonstration of the unusual, but as a means of aerial navigation did not seem to give much promise.

At all times during the day there were, on platforms within the race track and fronting the amphitheater, various performances of acrobats, a troupe of performing elephants and educated donkeys and other attractions that completely filled the time between the racing events. Music lovers were entertained many times daily by the performances of the great Liberati band. Throughout the week also there were at various times through the day performances by a band of five Scotch bag-pipe artists clad in plaids and kilts and attractive perhaps more because of their dress than their musical ability. Big Sandy, who operated on a big drum with his two arms flying like a Dutch windmill in an effort to pound both ends of his drum at one time, made a whole show of himself. Big Sandy, by the way, who seemed to be spokesman for the party, said that after a tour covering thirty-four State fairs he called this the greatest of them all. Among the amusing incidents was the act of a practical joker, who, in dilapidated buggy, hauled by a wornout old horse, constantly tooted a loud automobile gong, scaring the wits out of those who, in fear of being run over, jumped hurriedly out of the way, only to be loudly laughed at for their excited action.

FARMERS CAMP ON THE GROUNDS.

The Iowa State Fair is a leader in that it gets together a larger number of farmers who come to camp through the week than any other fair of which we have any knowledge. It is provided with a splendid shaded tract, in which tents are pleasantly located, and it was the estimate of the tent companies who furnished tents and other camping appliances that 5,000 people were located in the shady groves during the fair. The practice of camping during the Iowa State Fair is a growing one and with it has increased the habit of families or communities of driving from fifty to one hundred and fifty miles and camping on the way, making the trip to and from the fair a regular summer outing.

A feature which ought to be improved upon and which would be highly popular would be that of county buildings. At present a building is provided by Polk county and it is headquarters for all people of that county and a wonderful convenience to them. It would be well worth the while of boards of supervisors in other counties to make appropriations for buildings of this sort.

Agricultural and horticultural displays seemed rather not up to the usual point of excellence. Those who were closely connected with them feel that there should be a more liberal offer of premiums for the encouragement of the various branches. A system of county exhibits such as have made the Nebraska State Fair famous would no doubt add to the interest in Iowa. There is, however, a noticeable lack of personal enterprise and without this no really successful show can be promoted. It would be a valuable lesson to exhibitors, and particularly to producers who have not yet become exhibitors, could they attend the Minnesota Fair now in progress and note the wonderful show of fruit, grains and vegetables produced in that State, where the conditions are certainly not nearly so favorable as in Iowa.

IMPROVEMENT IN FAIR BUILDINGS.

Some considerable improvement in buildings has been provided during the last year. One of these was a new brick cattle barn on a plan which, it is presumed, will be followed by additional barns to be provided later. In the swine department the same old lack of accommodations existed. Pens were of necessity placed in locations inconvenient and unsatisfactory to exhibitors and the business convenience of those who came with stock to sell was given no consideration whatever. It is to be hoped that the management of the Iowa State Fair will, during the coming season, make such provision for the housing of the swine department as is commensurate with its importance.

The long row of dilapidated buildings devoted to the use of eating houses has been replaced by a substantial brick structure devoted to the same purpose this year. It was somewhat of an improvement in appearance, but the same old State Fair grub was prominent.

One of the most noticeable things about the whole fair was the immense number of small stands devoted to refreshments and the same of novelties. It would not be out of the way to say that hundreds of these were bunched together. The management sold privileges covering a twenty-foot lot at the rate of $65 for the fair week, and it was a surprising thing that among the great number of them every one transacted business through the week at a profit.

FARM MACHINERY.

The machinery department at the Iowa State Fair was a feature of wonder and admiration to all visitors who took the time to investigate its mammoth proportions. There were on exhibition giant wagons, plows—in fact, big things in general seemed to be the idea of the novelty—but nothing was so supremely gigantic in all its proportions as the big machinery exhibit as a whole. The superintendent and his assistants were completely exhausted in their efforts to take care of it.

"How large is your exhibit." was asked the superintendent.

"I have no way of computing its size except by acres," was the reply. "I have estimated it at thirty-five acres of machinery, and then not nearly all the housed machinery was figured in. It is fully one-third larger than last year, and last year was a record-breaker in this as well as many other departments."

"How do you account for this increase in machine display?"

"The idea is this: Farmers have learned that there is no place that affords them advantages equal to the State fair to see and examine machinery that they contemplate needing. They have commenced to put this into practice. They tell their local dealers that they are not going to buy until they see what there is at the State Fair. The local dealer writes his wholesale dealer notifying that factory that sales are going to be lost if there is not some one at the fair with a display to catch these farmers who are going sightseeing to the State Fair. The proposition is a plain one; any business man can see it at a glance—drop in line and show your machines or let the other fellow get the trade, sure thing."

The tendency is more and more toward the use of the fair as a means of comparison in making selections of articles and animals needed on the farm. It is a good business idea before buying to look around and compare things. This is the only means of protection the purchaser has in getting value received for his money. It sometimes is a satisfaction for him to know that he is getting a bargain, and certainly a gratification to know that he is not buying a poor article at a big price.

One estimate put the value of the machinery exhibit at $800,000. This would seem a very conservative guess. It was said by an old machine exhibitor that no such show had ever been made by any State Fair and has been equalled by but few expositions. Every known implement and machine of any possible use to the farmer was on display, and hundreds of the latest inventions could be seen for the first time. There were forty complete thresher outfits on the fair grounds, their presence being evident by their shrill, screeching whistles that kept up an unceasing noise at certain periods, when the whole steam engine creation seemed to be turned loose.

Among the curiosities in steam engine power was the climbing of a very steep incline to a platform which was overhead the crowd by a thresher engine. A $4,000 steam plow was one of the novelties for the Iowa farmer to see and consider. This was a gang plow operating ten 14-inch plows placed side by side, thus turning ten furrows at a time. It is claimed that this plow can turn twenty-five to thirty-five acres of land in a day. It is not an uncommon thing on the great wheat fields of the Dakotas. The giant wagon called "The New Moline" was another curiosity. This is a perfect wagon in all respects. It is 21 feet wide; weight, 9,654 pounds; capacity for oats, 640 bushels; for corn, 354 bushels. It is so high that a man can pass under it from side to side without stooping.

The race track provided daily a lively interest for those who are admirers of racing events and the performances were in keeping with the general magnitude and importance of the other features of the fair.

Camp Scene, Iowa State Fair Ground, 1906.

Ideal weather prevailed throughout the week, and if there were any elements which did not operate toward securing a successful fair its importance was small. The income for the week was more than $100,000, which breaks the record for the Iowa State Fair and demonstrates that Iowa farmers are enjoying a prosperity which enables them to take an interest in the great educational advantages offered by this show.

AWARDS MATURE CORN SHOW

HELD DURING STATE FARMERS' INSTITUTE AND AGRICULTURAL CONVENTION, DES MOINES, DECEMBER 11-12, 1906.

[PROF. P. G. HOLDEN, Judge.]

NORTHERN DISTRICT.

Lot No. 1—Ten Ears Large Yellow Dent, $12, $10, $5, $3, $2. First, H. L. Felter, Washta; second, Victor Felter, Washta; third, S. F. Ross, Elkport; fourth, J. W. Eral, Pocahontas; fifth, A. J. Doore, Greene; sixth, W. P. Dawson, Quimby.

Lot No. 2—Ten Ears Small Yellow Dent, $12, $10, $5, $3, $2. First, A. J. Doore, Greene; second, S. F. Ross, Elkport; third, J. W. Eral, Pocahontas; fourth, H. L. Felter, Washta; fifth, D. McArthur, Mason City; sixth, M. E. S. Waller, Rockford.

Lot No. 3—Ten Ears Large White Dent, $5, $3, $2. First, A. J. Doore, Greene; second, D. McArthur, Mason City; third, W. P. Dawson, Quimby.

Lot No. 4—Ten Ears Small White Dent, $5, $3, $2. First, A. J. Doore, Greene; second, D. McArthur, Mason City; third, W. P. Dawson, Quimby.

CENTRAL DISTRICT.

Lot No. 5—Ten Ears Large Yellow Dent, $10, $8, $6, $5, $4, $2, $1. First, Alvie Edison Bennett, Ames; second, Neal Bros., Mount Vernon; third, Fred McCulloch, Hartwick; fourth, Paul Taff, Panora; fifth, Ray C. Bennett, Ames; sixth, Frank Justice, Berwick; seventh, Grant Chapman, Bagley.

Lot No. 6—Ten Ears Small Yellow Dent, $10, $8, $6, $5, $4, $2, $1. First, George M. Fox, Dallas Center; second, N. Gormley, Bondurant; third, Alvie Edison Bennett, Ames; fourth, W. A. Radeke, Luzerne; fifth, Neal Bros., Mount Vernon; sixth, D. G. Wilson, Panora; seventh, Fred McCulloch, Hartwick.

Lot No. 7—Ten Ears Large White Dent, $6, $5, $4, $3, $2. First, Wm. Danner, Dallas Center; second, N. J. Harris, Des Moines; third, A. L. Plummer, Altoona; fourth, H. F. Ayres, Wilton Junction; fifth, A. A. McFerrin, Blanchard.

Lot. No. 8—Ten Ears Small White Dent, $6, $5, $4, $3, $2. First, Chas. H. Danner, Yale; second, N. J. Harris, Des Moines; third, Wm. Danner, Dallas Center; fourth, A. L. Plummer, Altoona; fifth, J. H. Winfrey, Runnells.

SOUTHERN DISTRICT.

Lot No. 9—Ten Ears Large Yellow Dent, $10, $8, $6, $5, $3, $2. First, L. W. Roe, Oskaloosa; second, C. C. Roe, Oskaloosa; third, Thos. Thompson, Villisca; fourth, W. E. Shakespear, Lamoni; fifth, W. A. Hook, Packwood; sixth, J. M. Brockway, Letts.

Lot No. 10—Ten Ears Small Yellow Dent, $10, $8, $6, $5, $3, $2. First, L. W. Roe, Oskaloosa; second, J. A. Mason, Carlisle; third, Walter Plows, Chariton; fourth, E. E. Morgan, Carlisle; fifth, W. A. Hook, Packwood; sixth, C. C. Roe, Oskaloosa.

Lot No. 11—Ten Ears Large White Dent, $6, $5, $4, $3, $1. First, T. B. White, Oskaloosa; second, Homer Dye, Oskaloosa; third, Lewis Hagglund, Essex; fourth, J. T. Carithers, Morning Sun; fifth, J. B. Blue, Adair.

Lot No. 12—Ten Ears Small White Dent, $6, $5, $4, $3, $1. First, T. B. White, Oskaloosa; second, Thos. Thompson, Villisca; third, Homer Dye, Oskaloosa; fourth, Samuel Shakespear, Lamoni; fifth, Lewis Hagglund, Essex.

SWEEPSTAKES.

Lot No. 13—Ten Ears, Any Variety, $20 and medal. Awarded to Alvie Edison Bennett, Ames.

Lot No. 14—Champion Single Ear, $10 and medal. Awarded to J. D. Buser, Conesville.

Buena Vista County Farmers' Institute Corn Exhibit, 1007

PART X.

Papers on Live Stock, Agricultural and Miscellaneous Topics

FROM

BULLETINS, AGRICULTURAL PRESS

AND

Papers Read Before County Farmers Institutes

FOOT-ROT OF SHEEP.*

By John R. Mohler, V. M. D., Chief of Pathological Division, Bureau of Animal Industry, and Henry J. Washburn, D. V. S., Assistant in Pathological Division, Bureau of Animal Industry, U. S. Department of Agriculture.

HISTORICAL REVIEW.

Foot-rot was first described by Chabert in the year 1791 as existing north of the Pyrenees on the banks of the Gironde and lower Medoc. Later it spread to central France, and was described by Pictet in 1805 and by Gohier in 1808, both of whom declared it to be a communicable disease. It was likewise observed about this time in Piedmont, Italy, and spread into Germany about 1815 as a result of the introduction of French Merinos. Not only has it appeared in epizootic form in continental Europe, but it has also spread through Great Britain, Australia, and the United States, where it was not infrequently observed during the past century.

The date of its first appearance on American soil is unknown. The statement has frequently been made that the disease was brought to American shores by the colonists through importations of Spanish Merinos and this statement seems to have been accepted by many writers without question or discussion. The first importation of Spanish Merinos for breeding purposes is reported to have been made in the year 1808, but the disease had become well established in this country prior to that time. Another reason for considering sheep from Spain very improbable as originators of the disease upon American soil is the fact that the sheep of Spain have been remarkably free from foot-rot. It is even asserted that it has never been seen on the dry table-lands which constitute the pastures of the entire region south of the Pyrenees. Spanish Merinos may have introduced the disease here, but it is very probable that they were first shipped from Spain to some other country, and thence, after a longer or shorter stay in their new home, reshipped, together with an infection of foot-rot, to America. It has been historically stated that the first settlers who attempted to establish flocks of sheep upon the prairie farms of Ohio, Indiana and Illinois met with most disheartening experiences, which were in a measure due to the spread of foot-rot. In the year 1797 an agricultural settlement was made in Illinois by farmers from the eastern colonies, who brought with them flocks and herds of the sheep and cattle common to the section of the country whence they came. During the decade following many new homes were established in the prairie regions, and a number of the settlers brought with them foundation stock with the intention of growing large flocks of sheep, but wolves and panthers proved to be very destructive, and liver disease and foot-rot also hindered the establishment of large bands, until finally the pioneers were forced to be content with small flocks that could be constantly housed, guarded, and given careful attention.

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* This paper is an abstract of Bulletin No. 63 of this Bureau.

The farmers of Maryland and Virginia were taking an increasing interest at this time in improved sheep. They had many discouraging conditions to contend with, and although it is possible that foot-rot was not known among their flocks at this time, it is certain that much trouble was caused by the appearance of "diseases, dogs and wolves," and that contagious foot-rot made itself known and feared as early as 1832 in these states.

Owing to the imperfect knowledge at that time of matters pertaining to bacterial diseases, the sheep owners struggled against the spread of foot-rot in their flocks somewhat unsuccessfully, and it often required constant watchfulness and persistent treatment for three or four years to eradicate the disease after it had become thoroughly established upon the premises of the sheep grower.

Later than this, in the late fifties and early sixties, there was a marked revival of interest in sheep raising throughout the middle west, and at this time many who had previously devoted their energies exclusively to grain or to cattle and hogs, concluded to change over to sheep, and the resulting traffic in these animals caused them to be moved about over the country roads and into new sections of the agricultural regions in numbers never before equaled. In several instances these traveling flocks carried foot-rot with them and infected the flocks with which they came in contact along their routes. The states of Ohio, Michigan (southern), Illinois and Iowa were most seriously infected, and in all of them the disease secured such firm foothold that several years of strenuous combat were necessary before it was even partially subdued. It was during this period that a sheep raiser of long practical experience, in writing from his home state, Ohio, made the statement that farmers in his part of the country had in times past been seriously troubled by the appearance of stubborn outbreaks of foot-rot among their flocks of sheep. In no case, however, had he been able to discover the spontaneous appearance of the disease, but with a little persistent inquiry it had been an easy task to trace the origin of each outbreak to the careless handling of diseased sheep brought from other localities. Since that time the disease has appeared frequently, but its spread has never assumed such alarming proportions, and, owing to a better understanding of the malady, it has been more successfully controlled.

SYMPTOMS AND LESIONS.

The first evidence of an attack of foot-rot to attract the attention of the shepherd is a slight lameness, which rapidly becomes more marked. Previous to this, however, there has appeared a moist area just above the horny part of the cleft of the foot, and this has gradually reddened and assumed a feverish, inflamed appearance. It may first become visible either at the front or back part of the cleft, but usually the erosions make their first appearance at the heel. The inflammation rapidly penetrates beneath the horny tissue, while from the ulcerous opening their exudes a thin, purulent fluid. The lameness has increased and the region of the foot above the hoof is becoming swollen and warm to the touch. The exudate from the erosions contains pus cells, bits of destroyed tissues of the foot, and bacteria. It possesses an odor pungent and disagreeable, but at the same time very characteristic. The experienced sheep-man is frequently able to detect the presence of the disease in a flock of sheep, even though it be while making a casual visit to a strange flock, simply by means of the diagnostic and unmistakable odor which arises from the affected feet. This odor is so pathognomonic of the disease that it would reveal the presence of affected sheep to one familiar with the character of the infection, even before noticing the animals.

The erosion progresses, if no treatment is applied, and there is rapid formation of fistulous passages beneath the horny covering of the foot, while the softer tissues of the interdigital space are gradually becoming degenerated and purulent. The invading microorganisms possess marked burrowing propensities, and the result of their activity is that large areas of the hoof become loosened from the sensitive tissues lying beneath.

The invasion of the necrotic process may continue until ligaments, tendons, and even the bones are attacked; but before this final stage is reached nature will attempt to repair the damage, and for this purpose the secretion of formative elements in the injured part is greatly increased, until there appears a peculiar growth composed of horny elements, dense epithelial cells and granulation tissue. These unsuccessful attempts at renewed development of tissue are termed " fungoid growths," and they have been known to materially hasten the shedding of the horny covering of the foot by their persistent enlargement within the ulcerous channels cut by the advancing infective elements.

The hoof of a sheep suffering from a chronic case of foot-rot grows out rapidly and becomes very hard. It will often be found with the toes so thickened and lengthened that the front part of the foot is raised above its natural incline and the tendons at the heel are subjected to additional strain, all of which tends to increase the lameness and the awkwardness in gait of the victim. These thickened and elongated toes will frequently be seen to have attained an added length of 3 or even 4 inches, and they curl up like sled runners, greatly interfering with the progression of the animal.

The sheep finds the act of walking so painful when the disease has become thoroughly established that it remains quietly lying in some secluded corner or, if diseased in the forefeet only, crawls around on its knees in its effort to keep with the remainder of the flock or to get within reach of its food. Its temperature rises until there is evidence of considerable fever. The appetite is seriously impaired and the patient rapidly loses condition and weight.

During warm weather there is great danger of an attack by maggots as soon as the lesions are discharging freely, and unless these are quickly removed they will appear in such numbers as to rapidly bring the course of the disease to a fatal ending. They not only invade the affected feet, but will also locate at any point of the body at which the wool has become sufficiently contaminated by the purulent discharge from the ulcerous tracts to afford them a suitably moistened breeding place. The wool on the sides of the body is frequently more or less soiled from contact with the diseased feet while the animal is lying down, and it is in such areas that the fly deposits the eggs that hatch into destructive larvae. As soon as the maggots are hatched they begin to burrow into the tissues upon which they are located and they quickly perforate the skin of their host, thus causing complications which bring its suffering to a close.

COURSE AND SUSCEPTIBILITY.

The course of this disease is slow and protracted, usually starting with one foot and subsequently involving one or more of the others. During this interval it would probably have likewise spread to the feet of other sheep, and in this way the disease may remain for several months in each member of the flock and for eight or ten months in the flock itself. When the ulcerous processes have become advanced and aggravated, fever develops, the appetite is lost, and the animal grows so emaciated that death intervenes. In some cases that are left untreated recovery may follow slowly, but there is usually either a dense fungoid growth between the claws, a stiffening of the joints of the ankle, or a long fissured and misshapen hoof. When treatment is properly applied in the early stages of the disease it is usually cured within ten days. It is very rare for death to occur as a result of foot-rot, although in very virulent outbreaks involving 3 or 4 feet of each sheep the affection may terminate fatally within two or three months.

The course of the disease is also dependent upon the susceptibility of the affected animal. Thus it is a well-accepted fact that the pure breeds of fine-wooled sheep are especially susceptible to foot-rot, although the pure breeds of coarse-wooled sheep and the grades of both of these breeds of animals are by no means exempt. In the latter animals, however, the disease runs a milder course, and is more amenable to treatment than in the case of the fine-wooled sheep. Sex or age does not appear to have any important influence on the susceptibility of the animals, as the disease manifests itself quite generally in the flock, attacking alike male and female, lambs, yearlings and aged sheep.

INFECTIVE CHARACTER.

Some of the early writers seem to have been convinced that this disease was in no degree contagious, but at a later period many investigators opposed this opinion and strongly maintained that it spread from sheep to sheep by means of some contaminating agent which exuded from the erosions upon the affected feet.

In opposition to these statements many veterinary writers were positive in their declarations that the disease was never caused otherwise than by pasturing on low, swampy lands, or as a result of overgrown toes or by other conditions due to faulty care and surroundings.

But while the majority of writers seem to have denied that the disease possessed any contagious properties, there remained a very lively minority who entered a most vigorous protest against this view of its character, and who cited instance after instance in support of their claim that it was strictly of a contagious nature. They mentioned cases in which affected sheep had been brought from a distance and placed in flocks that had been sound and healthy for years, with the result that a portion of the flock soon became affected; also a case in which healthy and diseased flocks pastured in adjoining fields without any transmission of the trouble until a time when two or three of the sound animals jumped the dividing fence and grazed for the remainder of the day with the contaminated flock, with the result that they promptly contracted foot-rot. These writers recorded the infection of sound flocks as the result of their having been driven over roads which diseased sheep had traversed but a short time previously. Reports were made of test lots of sheep that were pastured for months on swampy and muddy lands without spontaneous development of foot-rot, which promptly became affected, however, on their removal from these pastures when inoculated on the skin between the claws of their feet with discharge from an affected foot. They mentioned several attempts at experimental inoculation with bits of diseased tissue, or with some of the moist excretions from an affected foot, which usually favored the investigator with successful terminations.

One of the best of these experiments was reported by Favre in 1823. He simply moistened the skin between the claws of 32 healthy sheep with matter obtained from diseased feet, with the result that 21 of them contracted the disease in consequence of this slight exposure.

Another convincing argument in favor of the dependence of foot-rot on a specific cause is found in the fact that young lambs yeaned by affected ewes have been known to show unmistakable symptoms of the disease as early as the sixth day after birth, and as this has occurred in flocks that have been closely stabled there remains no possibility that the lameness of these lambs could have originated in swampy or muddy pastures.

Among the first experiments made by this bureau, preparatory to the publication of this article, were some for the purpose of investigating the contagious nature of the disease. By means of careful tests performed with the purulent exudate from the feet lesions of these animals it was proved that foot-rot could be produced at will in healthy sheep not only by spreading a little purulent matter from a diseased foot upon the scraped interdigital skin of sound feet, but quite as readily when bouillon cultures inoculated with some of the discharge from an affected foot were applied in a like manner, even when the cultures used were of the third generation of the original growth.

It appeared from these experiments that the disease was dependent upon a specific organism for its existence, and that this organism could be readily perpetuated by the employment of the usual methods of bacteriological culture.

Microscopical examination of the purulent material discharged from the open sore of a case of foot-rot revealed, among other bacteria, the constant presence of long thread-like bacilli, which conform to the characteristics of *bacillus necrophorus*, and which are capable, when brought in contact with the foot of a healthy sheep, of producing sores similar to those found in natural outbreaks of foot-rot.

Wherever it gains access to animal tissue it causes progressive degeneration and destruction, showing a tendency to spread in every direction from its first point of attack, and leaving behind as it advances a soft, dead, cheesy mass as the result of its poisonous effect upon all contiguous tissues.

EXPERIMENT ON SHEEP.

The readiness with which the disease will spread from sheep to sheep, when the flock is kept under suitable conditions for such spreading, has been recognized for many years by sheep owners. In addition to the practical demonstration of its contagious character, which has been given in past years in nearly every sheep-growing state in the Union, many experiments have been made with the idea of determining the cause of the transmission of the disease from one sheep to another. For this purpose numerous direct inoculations with material from diseased feet have been made during this investigation, and in order to show the effect of pure cultures of the necrosis bacillus indirect inoculations have also been performed. A brief record of these two classes of experiments upon sheep will here be given.

Direct, by pus from affected foot.—Two sheep, Nos. 40 and 63, were inoculated on the scarified interdigital skin with some of the exuded matter from an infected foot, and developed the disease in typical form in seven days in each case.*

Sheep No. 313 was inoculated with discharge from an infected foot on the shaven surface of the cleft of its foot. This was followed by the appearance of a characteristic inflammation on the ninth day, and the inflammation gradually developed into the usual course of ulceration seen in this disease.

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*In many cases where foot-rot was produced by inoculation antiseptic treatment was applied and a cure effected as soon as the disease had become characteristic.

Sheep No. 108 was inoculated upon the shaven surface of the skin of the foot with discharge from a diseased foot,' following which a protective application of moist sterile cotton and a linen bandage was applied. A characteristic case of foot-rot developed on the fourth day as a result. It seems probable that the early appearance of the disease in this instance was brought about by the partial exclusion of air and by the retention of more or less moisture upon the treated surface, through the agency of the cotton and bandage.

Lamb No. 94 is of special interest, having been born in an infected stall in December, 1901, and having continued until March 10, 1902, in daily contact with diseased sheep without showing the slightest evidence of lameness. During this period of exposure the stall in which the animals were confined was kept dry and clean. Had mud and moisture been present for the animals to walk about it, in common, the result would doubtless have been different. This test was continued for seventy-nine days, at the end of which time it was seen that the healthy lamb had received no degree of infection, although the disease had slowly continued to advance in the feet of its diseased companions until the affected members had become deeply eroded. Following this preliminary test, the lamb was directly inoculated, on March 10, by the application of material taken from a diseased foot to both of its feet on the right side. The interdigital spaces of both feet were scraped until the surface became blood tinged, when the watery exudate from the diseased foot of sheep No. 62 was smeared over the scraped surfaces. There appeared on both of these feet in fifteen days characteristic lesions of foot-rot, while the left hind foot also developed this disease from natural infection, although the lamb had previously withstood the danger incident to living in daily contact with diseased sheep. It may be stated in this connection that other negative results were also met with by exposing healthy to diseased sheep, but although seven such experiments did not produce the disease these can in no way offset the positive results obtained, considering that the exposure pens were always clean and dry and unlike the natural conditions under which infection usually spreads.

Indirect, by cultures.—A review of experiments made with pure cultures of the bacillus of necrosis will serve to show the part which this organism is capable of taking in the development of foot-rot in sheep.

A pure culture of the bacillus was obtained from the liver of a rabbit, which was the third in a series inoculated from the foot of an infected sheep. This pure culture was then applied to the scraped surface of a healthy foot of sheep No. 87. The surface upon which the culture was placed began to show inflammation on the tenth day, appearing reddened and moistened and exhibiting the presence of considerable heat. For ten days more the irritation appeared to progress, until at the end of that time a painful ulcer, coated with a grayish-white exudate, had formed. Spontaneous healing commenced at this period, but its progress was slow, and microscopic examination of the watery exudation from the ulcerous opening taken nearly two months later showed that many of the long filamentous forms of the necrosis bacillus were still present in it.

Another healthy sheep, No. 88, was inoculated upon the scraped surface of its foot with the same material as that used in the preceding case. The response was much more prompt (four days) in this case, and the ulceration penetrated the tissues of the foot for about the same depth, while the final healing, which occurred by scab formation, required about the same length of time for its establishment.

A third sheep, No. 89, to which the bacillus was applied in a pure state, showed inflammation of the foot in a few days and by the eighth day was sore and lame as a result. The erosion penetrated beneath the skin of the heels, constantly excreting foul-smelling yellowish pus. Spontaneous healing began to make its appearance in about three weeks after the inoculation, and rapidly progressed to the complete restoration of the foot.

A fourth test of a similar nature gave much the same results, except for a slight loosening of the hoof from a portion of one of the toes.

From the very nature of the conditions surrounding a flock of sheep it must be known that a natural infection by *bacillus necrophorus* in a pure state is an utter impossibility. There must of necessity be material contamination by various cocci and other bacteria from the floor of the sheep pens, or from muddy yards and runs. Many of these invading forms in all probability offer great assistance to the necrosis bacillus in penetrating normal tissue and in perpetuating and extending the disease.

The character and appearance of the material discharged from a foot inoculated artificially with a pure culture of the bacillus of necrosis indicate that there is a slight difference between the disease when produced in this manner and the natural type. The same redness of the surface is noted and the same tendency to send deepening process of ulceration and degeneration into the depths of the foot may be observed in both, but the discharge will be seen to consist largely of soft yellowish pus in those cases in which the foot has been inoculated with pure culture and the foot afterwards kept dry and clean, while in the natural infection under ordinary barnyard conditions and in cases produced artificially by the application of mixed bouillon cultures the exudate has more of a yellowish-gray watery appearance mixed with pus.

There is no noticeable difference in the odor of the affected feet whether the lesions are produced naturally or artificially, and the same disagreeable stench pervades all cultures made from them, especially after these cultures have grown for forty-eight horus or longer in the incubator; and it is a remarkable fact that the same odor may be detected lingering about the carcass of a rabbit which has succumbed to an inoculation with necrosis bacilli in all cases, whether the bacteria were derived from cases of foot-rot in sheep or from some other source.

The following experiments were made with tissue containing an abundance of necrosis bacili and with mixed bouillon cultures made from the pus of affected feet.

Sheep No. 83 was inoculated under the skin of the heel with material taken form the center of a necrotic lesion in a rabbit that died as a result of the infection of the necrosis bacilli. Here the attack was prompt and serious. The animal was unable to use its foot by the third day, and this degree of lameness lasted fully a week. The organism penetrated beneath the hoof on each toe, causing it to be separated in each instance from the tissues beneath. A profuse discharge was constantly exuding from the point of inoculation, in which the long threads of the necrosis bacillus could constantly be demonstrated.

Sheep No. 102 was inoculated on the foot by the application of a mixed bouillon culture that had been taken directly from a diseased foot and grown in an incubator for forty-eight hours, at a temperature of 35° C. Foot-rot was well established in the foot by the sixth day following, and its course was rapid and acute.

Goat No. 71 was successfully inoculated by having the skin of its interdigital space bared by the clipping off of the hair and the exposed surface then smeared with mixed bouillon culture of the third generation. As a result of this procedure the disease made itself manifest on the ninth day, and followed a typical course through the various stages of inflammation, spreading ulceration and necrosis.

ECONOMIC IMPORTANCE.

Throughout the middle west, where packing houses are located in many of the larger cities, the sheep-feeding industry has attained large proportions. At points situated within easy reach of the more important slaughtering centers stations have been established for the purpose of finishing off those sheep and lambs that have been shipped from the ranges farther west before they had reached a sufficient degree of fatness to admit their being dressed to advantage. The stations are located within easy reach of several of the more important stock yards, thus enabling the owner to take advantage of a favorable turn in market quotations, or to supply any shortage that may occur in the receipts of a particular grade of sheep at the yards with which he is associated.

There are several of these places with a capacity of over 50,000 sheep each, and one near Chicago that can accommodate 80,000, as will be seen by the following list of feeding stations, the total of which shows that 683,000 sheep can be finished for market at one time. This list does not include the vast numbers of animals that are fed in the feeding stations of the far west, nor those in bunches of 500 to 3,000, by private individuals throughout the central northern states.

Partial list of sheep-feeding stations in the United States.

Location	Capacity	Location	Capacity
Grand Island, Nebr	25,000	Plano, Ill	25,000
Norfolk, Nebr	25,000	Specht, Ill	25,000
Nickerson, Kans	25,000	Rochelle, Ill	20,000
St. Marys, Kans	25,000	Milldale, Ill	15,000
Hanover, Kans	8,000	Oswego, Ill	15,000
Columbus, Nebr	25,000	South St. Paul, Minn	40,000
Valley, Nebr	35,000	St. Anthony Park, Minn	60,000
Fremont, Nebr	25,000	Brighton, Minn	25,000
Stockdale, Ill	60,000	Trevor, Wis	25,000
Lafox, Ill	60,000		
Montgomery, Ill	80,000	Total	683,000
Kirkland, Ill	40,000		

It is customary to keep the animals closely penned during the period of their fattening at these establishments; in fact they are sometimes restricted to rather uncomfortably narrow quarters. They are divided into lots of 200 to 600, to suit the convenience of the feeder, and each lot is provided with a separate pen in which they remain from the time of their arrival until sufficiently finished to warrant the continuance of their journey to the packing house. In many cases their grain is supplied to them through "self-feeders," by which means a supply is kept constantly before them. Water is also available at all times, and the incentive to active exercise is very slight, even if the pens were large enough to allow unrestricted movements. Under these conditions an outbreak of foot-rot quickly assumes serious proportions. While the disease will not of necessity spread from one pen to an adjoining one, there are several cases on record where the contagion has been so thoroughly disseminated among individual pens in which a few infected sheep have been placed that only a small number of its inmates escaped the attack. Inspectors of the Bureau of Animal Industry, United States Department of Agriculture, occasionally find an affected flock among the arrivals of sheep at the various railway terminals, in which the feet of as many as 75 to 80 per cent are diseased to a greater or lesser extent. These bunches of sheep have no doubt been run together in the feeding pens, and the percentage of diseased animals gives one a very good idea of the infectiveness of foot-rot under these conditions.

The sheep raiser or feeder who carries on his business upon a modest scale is often just as seriously injured by an outbreak of foot-rot in his flock as is anyone. His sheep run at will over a large portion of his farm, and it soon becomes so thoroughly contaminated by the repeated passage of diseased feet that the owner not only becomes thoroughly discouraged by the repeated failures of his attempts to eradicate the contagion from the premises, but his neighbors begin to look on him with suspicion, and in certain instances have become so aroused as to warn the unfortunate man against entering upon or crossing their holdings until he has succeeded in stamping out the dreaded plague.

The importer or breeder of choice registered sheep is frequently damaged materially by the appearance of this disease among his valuable animals. Foot-rot occasionally develops in sheep soon after importation from European countries in spite of careful examination at the time of purchase. In these cases it is probable that the virus had become lodged in some deep fissure under the horny covering of the foot during some previous exposure, and that it had remained latent in its hiding place until favoring conditions stimulated its growth.

Whatever the manner of propagating the infecting agent, the fact remains that foot-rot frequently manifests itself among flocks of blooded sheep while on shipboard on the way to this country, and conditions here favoring the spread of the infection from sheep to sheep, it is not uncommon for the animals of certain pens to show serious lameness by the time the port of debarkation is reached. Another place in which the owner of improved sheep expose his best specimens to more or less danger of infection is at the live-stock shows of the country, where his animals are exhibited side by side with sheep from widely scattered localities. This danger, however, is reduced to a minimum by the excellent care given to both animals and pens while the exhibition is in progress. The greatest danger is probably met when the animals are loaded and unloaded over a chute at the railway station, which is used by all of the exhibitors in common.

The raising of Angora goats is also becoming an industry of great economic importance. Their value as producers of mohair, of fleece-bearing skins, and of meat, together with their efficiency as eradicators of brush and weeds, is bringing them into increasing favor with practical American people, while their beautiful silky coats and gentle dispositions make them very attractive as pets for those who seek to derive pleasure rather than profit from them. At the present time large sums of money are invested in these animals, and individual flocks numbering thousands of animals are not uncommon in some localities. An association of breeders has been formed which supports a registry book, and live-stock exhibitions at which the Angora forms a prominent feature are sure to attract general interest.

The experiments which have been made at this laboratory prove that Angora goats may readily be inoculated with foot-rot from sheep, and that where sheep and goats are allowed to pasture together they may be indiscriminately attacked by an invasion of this disease.

To what degree foot-rot exists among sheep and goats in this country can not be accurately stated, for the reason that our statistics are insufficient to furnish a basis for a reasonable estimate. Occasional outbreaks, especially the highly virulent ones, are reported, and in these cases about three-fourths of the flock become affected. Owing to the slow, protracted course of the disease and the length of time required for the affection to pass through a bunch of sheep, the losses occurring from the shrinkage of flesh in market sheep and from the diminution of the supply of milk for the sucking lambs of the affected ewes reach material proportions. In addition to these direct losses, the owner of an infected flock of full-blooded animals is subjected to discouraging failures in his attempts at selling off his surplus breeding stock, as buyers are naturally reluctant to introduce lame animals into their sheep-folds. The time and labor spent in the treatment of the feet of an infected flock should also be brought forward in this calculation of monetary loss.

DIFFERENTIAL DIAGNOSIS.

There are but few pathological conditions of the feet of sheep or goats that may be mistaken for contagious foot-rot. When lameness first makes its appearance in a flock there may be some difficulty, however, in determining the exact nature of the trouble. Lameness may be primarily caused in these animals by wounds of the feet, by purulent inflammation of the interdigital space (so-called non-contagious foot-rot), by stoppage of the orifice of the biflex canal, by suppurative cellulitis (cutaneous abscesses), or by foot-and-mouth disease, and for a time the lesions produced by any one of these causes offer a very confusing resemblance to those characteristics of the invading stage of foot-rot.

WOUNDS OF THE FEET.

Sheep may occasionally puncture the skin of the interdigital space by forcing a sharp stone or stub between the claws of the foot, but such accidents are infrequent, and the fever and lameness thus produced seldom last for more than a few days.

A more common cause of accidental lesions to the feet of sheep is found around some yards or stables, where loose boards with the points of nails sticking up from their surfaces are carelessly left for the flock to run over.

PURULENT INFLAMMATION OF THE INTERDIGITAL SPACE (FOULS).

This condition is one that is frequently met in sheep, and it has often been mistakenly called foot-rot. From this faulty naming has arisen much of the controversy over the question of the contagiousness of foot-rot. Parties who have had experience only with purulent inflammation of the foot, and who have looked upon it as foot-rot, have very reasonably asserted that foot-rot is by no means contagious, that it appears sporadically, may attack but few members of the flock, yields promptly to treatment, and nearly always makes its appearance among sheep during their psturage upon low, swampy land. If the term foot-rot is used at all in connection with purulent inflammation of the feet, it should be qualified by calling the affection benign or non-contagious foot-rot, in order to avoid all confusion with the real or contagious form of the disease. This purulent inflammation may result from pasturing or wet, filthy grounds or on low, marshy lands. An irritation of the cleft of the foot occurs which is followed by fissures in the skin and a softening of the horn resembling foot-rot. In rainy weather sheep that are pasturing upon clay soils often accumulate irritating masses of twigs, stubble, or small, sharp pebbles in the interdigital space of the foot. These substances become thoroughly embedded in moistened clay, and this mixture is gradually molded to the form of the space between the claws of the foot. In this position it will remain for days unless removed by force, and it may be the cause of serious inflammation, suppuration, and lameness so long as it retains its position in this sensitive place. Each step of the animal causes the projecting points of the offending material to cut deeper and deeper into the adjoining tissues of the foot. There ensues swelling above the coronet and the whole of this region becomes reddened and feverish. Cases have been noted where marsh-grasses with their saw-like edges have become entangled in the cleft of the foot and have remained in position long enough to set up a painful irritation by their constant friction. Finally, on examining the foot of a lame sheep, one may discover the presence of none of these pointed objects, and still the inflammation is intense. This condition has been known to follow the entrance of particles of sand and gravel into the cuts, cracks, or injuries, and one should always bear this in mind while looking for a cause for lameness, and carefully remove the grit or dirt which may be present. Sometimes the horn, having grown rapidly because of the unusual stimulation, may inclose the gravel and retain it within the foot as a constant source of irritation.

STOPPAGE OF THE BIFLEX CANAL.

Sheep and goats are provided with a secretory gland called the interungulate or biflex, situated among the tegumentary tissues of the leg just above the separation of the digits. The orifice of the little vessel that leads from this gland may be plainly seen upon spreading the toes apart. It occasionally happens that mud, sand, or some other gritty substance becomes forced up into the biflex canal and lodges there, not only choking up the excretory passage of the gland above, but also causing inflammation of the walls of the canal, which may develop into extensive suppuration and serious lameness.

This affection may be distinguished from contagious foot-rot by the fact that the ulceration does not tend to invade the tissues beneath the horny covering of the foot, nor does it assume an infectious character.

SUPPURATIVE CELLULITIS (CUTANEOUS ABSCESSES).

Stockmen whose sheep are obliged to pass daily through muddy yards or pens sometimes notice the eruption of sores, varying in size from the diameter of a millet seed to that of a silver dollar, just above the hoof, farther up on the ankle, or still higher up between ankle and knee.

The first indication of the trouble will be an erection of the hair over the affected area, quickly followed by swelling of the part, and accompanied with a marked rise of temperature in the animal, loss of appetite, sluggishness, and rapid wasting of condition.

As the disease advances, each of the inflamed areas develops a typical abscess, containing creamy pus with a very offensive odor. Should any of these find lodgment in the tissues of the foot they may be mistaken at first for indications of foot-rot, but the simultaneous appearance of similar abscesses beneath the skin of the leg will at once prove to the owner the nature of the trouble.

FOOT-AND-MOUTH DISEASE.

This country, most fortunately, has never experienced a serious outbreak of foot-and-mouth disease in sections in which the sheep industry forms an important factor in agricultural activities. It is one of the scourges of European countries, and the annual reports of outbreaks of contagious diseases in those lands show what a firm footing the disease has gained among their flocks and herds.

Should an invasion of this disease ever be mistaken for foot-rot in sheep, the illusion will not be one of long duration. The eruptions which appear upon the feet of sheep in an attack of foot-and-mouth disease may, during the invasive period of the outbreak, bear a close resemblance to those of foot-rot, but they are more superficial in their effect, being devoid of the deep-seated, erosive passages which characterize the foot-rot lesion, and for this reason they are far more transient, disappearing voluntarily when the disease has run its course in all cases in which the attack reaches a favorable termination. The lesions of foot-and-mouth disease are more plainly to be seen, the destructive processes frequently extending up above the cleft of the foot in front or rear into plain view of the examiner. In uncomplicated cases there is never any tendency to fungoid growths, and the structure of the hoof retains its normal formation and does not become soft or crumbling, as it frequently does after an attack of foot-rot. The primary attack of foot-and-mouth disease is usually evidenced by the simultaneous affection of at least three of the feet of the animal. The infection spreads more rapidly through the flock, and not to the sheep alone, but to the cattle and hogs which are permitted to mingle with them. In addition to the eruptions on the feet the sheep suffering from foot-and-mouth disease will occasionally show reddened patches upon the membranes of mouth and lips which speedily develop into blisters of varying sizes. The tongue may be affected in the same manner. These blisters soon rupture, leaving raw, open sores. The teats and udders of affected ewes are frequently the seat of like eruptions. The temperature of the animal shows marked elevation during the invasion of the trouble (106° F.), but this does not persist after the rupture of the vesicles. Lesions of the mouth are not as constant in sheep as they are in members of the bovine family.

A number of European writers have in the past insisted that contagious foot-rot of sheep does not exist independently of foot-and-mouth disease, but the very fact that contagious foot-rot has for years been more or less prevalent among American sheep without ever having given rise to foot-and-mouth disease among the cattle and hogs of the same farms offers the most conclusive evidence that the diseases are independent of one another and that they have their origin in separate, specific organisms.

PREVENTION.

The prevention of foot-rot, a matter of absorbing interest to the sheep owner, may be successfully attained by means of careful management.

When purchasing sheep to be added to a healthy flock the buyer can not exercise too great caution in his examination of the new-comers, and to hold them for a few days in isolated quarters before permitting them to join the main flock may prove to be time and effort well spent. Another precaution which will in some cases prove beneficial may be found in the regular examination at stated intervals of the feet of each member of the flock and the removal of all excessive growths of horn. A large percentage of lameness in the horse is due to an "unbalanced foot," and the first step in treatment should always be the paring of the hoof, or the formation of the shoe in such a manner that the foot of the horse, while he is standing at ease, will be perfectly level in its relation to the floor surface upon which he is standing. The same rule holds good in an application to the bovine race. Overgrown hoofs should be so trimmed that the plantar or wearing surface of the foot will present a natural angle to the direction of the shaft of the leg, and all superfluous length of toe should be removed. Overgrown toes frequently tend to forcibly spread the hoofs apart, the tension thus produced leading in many cases to strained tendons and to lessening the natural resistance of the tissues of the region to injury.

A great amount of vital energy is unnecessarily expended in walking by a sheep with overgrown toes, especially if the animal is kept in yards or pens where cornstalks or other course litter are allowed to accumulate, or if it is pastured in stubble fields or where the grass has become long and tangled.

The heels of the hoofs seldom require any cutting, and the labor of trimming may consequently be entirely expended upon the toe. Soaking the feet for a time will be found to soften hoofs that are at first too hard to yield readily to the knife. It will be found satisfactory, where practicable, to select a time for trimming the hoofs when the flock may be brought up to the pens directly from an excursion through wet grass. The early morning, following a heavy fall of dew, is frequently selected for this purpose, or the work, if not neglected too long, may be deferred until a suitable rainy day.

Should the infection of foot-rot have been introduced into a sheep yard, trimming the feet will not prevent the spread of the disease, except as it indirectly assists nature in keeping the cleft of the foot free from dirt, and the wise shepherd will not relax his vigilance at the time of admitting fresh arrivals upon his premises, as it is at that time that he may most easily prevent the spread of this disastrous malady among his healthy animals.

Experience has shown that sound sheep may be safely pastured on land that has previously been occupied by sheep suffering from foot-rot, provided that a winter's frosts have been allowed to intervene. The contagion of the disease seems to be effectively subdued by this means, and pastures that have become contaminated one season may be considered safe for their customary usage during the following season. The sheepfold, however, must be carefully disinfected to prevent the recurrence of the disease, as this bacillus will retain its virulence under suitable conditions in or around stables for several years.

The walls, racks, and troughs should be sprinkled with a solution containing 1 pound of pure carbolic acid to 5 gallons of water, to which enough lime has been added to make the sprayed area conspicuous. The manure and four inches of the surface soil should be removed and spread on a field that is to be tilled. In turning sheep on grass care should be taken to avoid low, marshy, or boggy lands, and to keep them, if possible, on high, dry pastures.

TREATMENT.

One of the first steps to be taken in the treatment of a flock of sheep affected with foot-rot is to separate all that are in any degree diseased from those that are healthy. After this has been accomplished much will depend upon the stage which the disease has reached among the animals of the flock in determining upon further action. Should the disease be in its earliest stage, with but few animals affected, it will doubtless be found sufficient treatment for those that appear sound to pass them through a shallow trough containing a solution composed of 1 pound of chloride of lime to each 12 quarts of water. This solution should have a depth of at least 4 inches in the trough, and the animals should be made to pass through it slowly, allowing time for the mixture to apply itself thoroughly to all the cracks and fissures of the feet. Instead of the mixture of chloride of lime, a solution composed of one part of carbolic acid crystals to every thirty parts of water, or 1 pound of pure carbolic acid to 4 gallons of water, may be used as a foot-bath for the sound part of the flock.

The trough used in this operation may be of wood, tightly constructed, 20 inches in width, and a foot or more in depth. The length should be proportioned to the size of the flock to be treated. For small lots that are accustomed to being handled, the trough need not be over 6 feet in length. In such cases, however, the animals should be allowed to stand for a moment in the solution before passing out. A greater length of trough would necessitate the preparation of a larger amount of fluid, and consequently would entail greater expense. Where a large number of sheep is to be treated, the trough should not be less than 20 feet in length. Hurdles or portable racks may be so arranged by the sides of the trough and along the pathway leading to it that each animal will be obliged to pass through the bath with but little urging.

After this treatment has been applied to the sound part of the flock, they should be at once placed in fresh, uncontaminated quarters. Although they are not likely to show any evidences of the disease after being treated in this way, the owner or shepherd should not neglect them, but should closely watch for any signs of lameness, and when discovered, the affected animals should be promptly removed and subjected to more careful treatment. In case the flock from which the healthy sheep were separated is badly diseased, it would be advisable to have the sound animals pass through the bath, as described above, on several occasions. This may be done every second day until three or four treatments have been applied, special care being taken in the meantime to provide fresh, clean quarters for the animals, completely separated from the diseased portion of the flock.

While selecting treatment for that portion of the flock in which the disease has become established, it should be remembered that the principal requisites are to lay bare the affected surfaces and to dstroy the infectious matter which has lodged upon them. The remedy which will accomplish this most readily, and at the same time not give rise to harmful secondary conditions, is evidently the one that should be given the preference.

The bacteria, to which the disease is due, yield very readily to the application of disinfectants, and the trouble which so many sheep men have experienced in the eradication of foot-rot from their flocks must have been due to a failure to properly expose the affected surfaces to the action of the applied remedy.

During the present series of experiments many of the feet in which disease has been purposely produced have been healed up as soon as the true course of the affection had become evident, so as to avoid unnecessary lameness, and in these cases it has been found that all advance of the disease processes has promptly stopped upon the application of a 5 per cent solution of carbolic acid, several applications usually proving sufficient. In these cases, however, it must be admitted that the conditions for successfully healing the lesions were far more favorable than those which surround the average diseased flock upon the farm. In the first place, the erosions had not extended very deeply into the foot, and, secondly, the animal was not allowed to run in a muddy yard, but was kept upon a dry stable floor. The instances serve to prove, however, that the remedy need not be very poisonous or caustic to produce the desired results, and to emphasize the fact that one must constantly aim, while treating foot-rot in sheep, to expose the diseased areas to the action of the disinfectant used.

Treatment of the affected animals should not be deferred, as more satisfactory results will be obtained by attacking the outbreak as soon as discovered than can be expected if the disease is permitted to spread among the flock or to penetrate deeper into the tissues of the affected feet. This is accepted as a very practical fact by the English shepherds, who attend shipments of thoroughbred sheep on their trans-Atlantic voyage to this country for breeding purposes. The statement is made by them that none but negligent or inexperienced shepherds will ever allow foot-rot to spread through a flock of which they are in charge, as thorough trimming and antiseptic treatment of the hoof of the first animals seen to be lame will surely save the balance of the sheep from an attack.

The treatment already suggested for the sound portion of the flock will be found very efficacious for early stages of the disease, but after the animal has become more seriously affected one should carefully examine each of its feet and, if necessary, pare away all shredded or loosened portions of the horny tissue. This will often prove to be a very laborious undertaking, but the operator should persist until the loosened horn has been thoroughly removed and all of the ulcerous fissures have been exposed.

The foot must be carefully cleaned and every portion of loosened and detached horn cut away, as the horny tissue once separated from the sensitive parts beneath will never unite with them again, but will remain as a source of pain and inflammation and also a protection for the disease-producing organisms while they attack and destroy the internal structures. Should fungoid granulations be met they should be removed with a knife or pair of curved scissors. All clippings and trimmings that are removed from the diseased feet, whether composed of bits of horn, shreds of tissue, or fungoid growths, should be carefully gathered up and burned or disinfected, as they may serve to spread the disease further if left where passing sheep may come in contact with them.

If this work has been thoroughly done, standing a sheep for ten minutes in a strong solution of copper sulphate (blue vitrol), made as warm as can be borne by the hand, will in most cases effect a cure. This solution may be prepared by dissolving 3 pounds of copper sulphate in 5 gallons of warm water. The foot-bath should be repeated if necessary.

An attendant should remain stationed by the side of each sheep whose feet are badly affected, to prevent the animal from lying down while it is in the copper-sulphate solution, as sheep of this class, because of the pain produced during their efforts to stand, are liable to drop to their knees, or even to lie down in the trough, during the application of the treatment. Soft bandages should be applied, after the sheep are removed from the foot-bath, to all feet that have required deep cutting, not only for the purpose of protecting the sensitive tissue from becoming bruised, but in order that particles of dirt may be kept from the raw surfaces and that nature may be assisted in the formation of new protective coverings.

It sometimes happens that the disease assumes an aggravated form in several of the sheep, involving the deeper sensitive tissues and necessitating the application of hand dressings to the feet. In such cases all the loose and diseased tissue should be cut away and the affected parts washed thoroughly with a 5 per cent solution of carbolic acid. An antiseptic astringent powder, consisting of 4 parts of carbolic acid, 2 parts of tannic acid, and 94 parts of exsiccated alum, is then dusted upon the ulcerated surfaces and a bandage applied to afford the parts the desired amount of protection.

The most earnest efforts should be made to conquer the disease before the advent of warm weather, as it will be found more difficult to deal with during that period. On the contrary, cold weather and dry seasons are unfavorable for the development or spread of the disease, although they will not cure it.

STOMACH WORMS (HAEMONCHUS CONTORTUS) IN SHEEP.

By B. H. Ransom, Chief of the Division of Zoology, U. S. Department of Agriculture.

The stomach worm of sheep, known to zoologists as *Haemonchus Contortus*, is generally recognized as one of the most serious pests with which the sheep raiser has to contend. Sheep of all ages are subject to infection, and cattle and goats as well as various wild ruminants may also harbor the parasite. The most serious effects of stomach-worm infection are seen in lambs, while full-grown sheep, although heavily infested, may show no apparent symptoms of disease. It is from these, however, through the medium of the pasture, that the lambs become infected.

SYMPTOMS AND DIAGNOSIS.

Among the symptoms which have been described for stomach-worm disease probably the most frequent are anemia, loss of flesh, general weakness, dullness, capricious appetite, thirst, and diarrhea. The anemic condition is seen in the paleness of the skin and mucous membranes of the mouth and eye, and in the watery swellings which often develop under the lower jaw. A more certain diagnosis may be made by killing one of the flock and opening the fourth stomach. The contents of the fourth stomach are allowed to settle gently, and by carefully watching the liquid the parasites, if present in any considerable numbers, will be seen actively wriggling about like little snakes from one-half to 1¼ inches long and about as thick as an ordinary pin.

LIFE HISTORY OF THE STOMACH WORM.*

The worms in the stomach produce eggs of microscopic size, which pass out of the body in the droppings and are thus scattered broadcast over the pasture. If the temperature is above 40° to 50° F. the eggs hatch out, requiring from a few hours to two weeks, according as the temperature is high or low. When the temperature is below 40° F. the eggs remain dormant, and in this condition may retain their vitality for two or three months, afterwards hatching out if the weather becomes warmer. Freezing or drying soon kills the unhatched eggs. The tiny worm which hatches from the egg feeds upon the organic matter in the manure, and grows until it is nearly one-thirtieth of an inch in length. Further development then ceases until the worm is swallowed by a sheep or other ruminant, after which it again begins to grow, and reaches maturity in the fourth stomach of its host in two or three weeks. The chances of the young worms being swallowed are greatly increased by the fact that they crawl up blades of grass whenever sufficient moisture—such as dew, rain, or fog—is present, provided also that the temperature is above 40° F. When the temperature is below 40° F. the worms are inactive.

The young worms which have reached the stage when they are ready to be taken into the body are greatly resistant to cold and dryness; they will stand repeated freezing, and have been kept in a dried condition for thirty-five days, afterwards reviving when moisture was added. At a temperature of about 70° F. young worms have been kept alive for as long as six months, and the infection in inclosure (near Washington, D. C.) which had been pastured by infested sheep did not die out in over seven months, including the winter, the inclosures having been left vacant from October 25th to June 16th. It is uncertain whether infection in fields from which sheep have been removed will die out more rapidly during warm weather or during cold weather; experiments on this point are under way, but have not been sufficiently completed for definite statements to be made. It is, however, safe to say that a field which has had no sheep, cattle or goats upon it for a year will be practically free from infection, and fields which have had no sheep or other ruminants upon them following cultivation may also be safely used. The time required for a clean pasture to become infectious after infested sheep are placed upon it depends upon the temperature; that is, the field does not become infectious until the eggs of the parasites contained in the droppings of the sheep have hatched out and the young worms have developed to the final larval stage, and the rapidity of this development depends upon the temperature. It may be stated here that neither the eggs nor the newly hatched worms are infectious, and only those worms which have reached the final larval stage are able to continue their development when swallowed. This final larval stage is reached in three to four days after the eggs have passed out of the body of the host if the temperature remains constantly at about 95° F. At 70° F., six to fourteen days are required, and at 46° to 57° F., averaging about 50° F., three to four weeks are necessary for the eggs to hatch and the young worms to develop to the infectious stage. At temperatures below 40° F., as already stated, the eggs remain dormant.

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* Some of the details in the life history of this parasite are treated more at length in Circular No. 93 of the Bureau of Animal Industry.

METHODS OF PREVENTING INFECTION.

It is evident from the foregoing statements that in the northern part of the United States, under usual climatic conditions, infested and non-infested sheep may be placed together in clean fields the last of October or first of November and kept there until March or even later, according to the weather, with little or no danger of the non-infested sheep becoming infected. If moved then to another clean field they may remain there nearly the entire month of April before there is danger of infection. From the 1st of May on through the summer the pastures become infectious much more quickly after infested sheep are placed upon them, and during May it would be necessary to move the sheep at the end of every two weeks, in June at the end of every ten days, and in July and August at the end of each week, in order to prevent the non-infested sheep from becoming infected from the worms present in the rest of the flock. After the 1st of September the period may again be lengthened. This method of preventing infection in lambs would require a considerable number of small pastures or subdivisions of large pastures, and in many instances could not be profitably employed, but in cases where it could be used it would undoubtedly prove very effective. By the time the next lamb crop appeared the pastures used the year before would have remained vacant long enough for the infection to have disappeared, and would consequently again be ready for use. By continuing this rotation from year to year, not only would each crop of lambs be protected from infection, but as reinfection of the infested ewe flock is prevented at the same time, the parasite would in a few years be entirely eradicated from the flock and pastures.

If such frequent rotation is not possible or practicable, a smaller number of pastures may be utilized, after the ewe flock has been treated with vermifuges. The treatment may be given either before or after the birth of the lambs. If before, the ewes should be treated before pregnancy is too far advanced, in order to avoid possible bad results from the handling necessary in treatment. Probably the best time for treatment is late in the fall or early in the winter. The treated sheep should be placed immediately on clean pasture in order to avoid reinfection. The object of treating the ewes is to get rid of the worms with which they are infested, and thus remove the source from which the pasture becomes contaminated. If it were possible by treatment to free the old sheep entirely from stomach worms, it is evident that the lambs would remain free from infection, provided, of course, that the flock were afterwards kept on clean pasture. Unfortunately, there is no vermifuge known which can always be depended upon to remove all of the worms, but it is possible to get rid of most of them, and thus greatly reduce the amount of infection to which the lambs will be exposed.

Two other methods may be suggested by which lambs can be kept free from infection with stomach worms.

1. It is assumed that a large pasture is available which has had no sheep, goats, or cattle upon it for a year, if a permanent pasture, or since cultivation, if a seeded pasture. This pasture is subdivided into two by a double line of fence, and a drainage ditch is run along the alley between the two fences. At one end of the alley between the two subdivisions a small yard is constructed, communicating with each of the subdivisions by means of a gate. When the lambs are born they are placed in one of the subdivisions and the ewes are placed in the other. The small yard should be kept free of vegetation and must not drain into the lamb pasture. As often as necessary the lambs are allowed in the small yard with the ewes for suckling. The rest of the time the lambs and ewes are kept separate in their respective pastures. By this arrangement the lambs are exposed to infection only while they are in the small yard, where they may become infected either by embryos of the stomach worm present on the manure-soiled skin of the infested ewes, or by embryos picked up from the ground which has been contaminated by the droppings of the ewes. The chances of infection from the skin of the ewe are so slight that in practice this source of infection need not be considered. The danger of infection from the ground may be avoided by frequently removing the manure from the yard and keeping the surface sprinkled with lime and salt. The lambs and ewes will soon learn the way to their proper pastures, and after a few days little difficulty will be experienced in separating them each time after the lambs are through suckling.

2. Another plan which may be followed where the climatic conditions are suitable—that is, in regions where there is a cold winter season—is that of having the lambs born at a time of year when there will be no danger of their becoming infected during the suckling period, and weaning and separating them from the rest of the flock before the advent of warm weather. Under the usual climatic conditions of the state of Ohio, for instance, if the lambs are born in the latter part of October or the first of November they may remain with the ewes on fields which have not been previously occupied by sheep, goats or cattle within a year —or, if cultivated fields, since cultivation—until the following March without danger of becoming infected, since the eggs in the droppings of the infested ewes will not hatch out during this time of year because of the cold weather. The use of fields not previously occupied by sheep, goats, or cattle within a year, or since cultivation, is necessary, since otherwise the fields would be already infected with young worms which had hatched out and reached the infectious stage before the beginning of cold weather, and the lambs would consequently be liable to infection from picking up these young worms, which are not killed by cold weather after they have reached the final stage of larval development. When they are weaned the lambs must, of course, be placed on clean pasture, if they are to continue free from infection. With this method only two clean pastures are necessary, one in which the ewes and lambs are placed in the fall, and another for the lambs when they are weaned in March.

Unfortunately for this scheme, it is not always possible to have lambs born at the beginning of the winter season; but with additional clean pastures a modification of the foregoing method may be used in the case of lambs born toward the end of the winter or in the spring. In the northern United States lambs born the first of February, for example, may be kept with their mothers in a clean field or pasture until the last of March, as in the case of those born at the beginning of winter, but unlike the latter they will not then be old enough to wean. Accordingly they are not separated from the rest of the flock, but the ewes and lambs are moved together to a second clean pasture April 1st. May 1st they are moved to a third clean pasture, May 15th they are moved again, and finally the lambs are weaned June 1st at the age of four months, and moved by themselves to a clean pasture. In the case of lambs born the first of March and weaned the first of July three additional clean pastures would be required for use during the month of June, and with later lambs a still greater number of pastures would be necessary.

TREATMENT FOR STOMACH WORMS.

Among the remedies which may be used to remove stomach worms may be mentioned coal-tar, creosote, bluestone and gasoline.

The animals to be treated should be deprived of feed for twelve to sixteen or even twenty-four hours before they are dosed, and in case bluestone is used should receive no water on the day they are dosed, either before or after dosing. In drenching, a long-necked bottle or a drenching tube may be used. In case a bottle is used the dose to be given may be first measured off, poured into the bottle, and the point marked on the outside of the bottle with a file, so that subsequent doses may be measured in the bottle itself. A simple form of drenching tube consists of a piece of rubber tubing about 3 feet long and one-half inch in diameter, with an ordinary tin funnel inserted in one end and a piece of brass or iron tubing 4 to 6 inches long and of suitable diameter inserted in the other end. In use the metal tube is placed in the animal's mouth between the back teeth and the dose is poured into the funnel, which is either held by an assistant or fastened to a post. The flow of liquid through the tube is controlled by pinching the rubber tubing near the point of union with the metal tube. It is important not to raise the animal's head too high on account of the danger of the dose entering the lungs. The nose should not be raised higher than the level of the eyes. The animal may be dosed either standing on all fours or set upon its haunches. It has been found by experiment that if the dose is taken quietly most of it will pass directly to the fourth stomach when the animal is dosed in a standing position, and that when the animal is placed on its haunches only a part of the dose passes immediately to the fourth stomach. From this it is evident that the position on all fours is preferable, as more of the dose passes to the place where its action is required.

Great care should be used not only in dosing to avoid the entrance of the liquid into the lungs, but also in the preparation and administration of the remedy so that the solution may not be too strong or the dose too large.

COAL-TAR CREOSOTE.

Good results have been obtained from a single dose of a 1 per cent solution of coal-tar creosote. This solution is made by shaking together 1 ounce of coal-tar creosote and 99 ounces (6 pints 3 ounces) of water.

The doses of this 1 per cent mixture recommended by Stiles are as follows:

Lamb 4 to 12 months old	2 to 4 ounces
Yearling sheep and above	3 to 5 ounces
Calves 3 to 8 months old	5 to 10 ounces
Yearling steers	1 pint
Two-year-olds and above	1 quart

Serious objections to the use of coal-tar creosote have been found in that the substance known by this name varies considerably in composition and in that some trouble is often experienced in obtaining it in many parts of the country. Complaints have been made that the substance dispensed by some druggists as coal-tar creosote has failed to give satisfactory results.

BLUESTONE.

Bluestone, or copper sulfate, has been extensively used in South Africa in the treatment of sheep for stomach worms and is recommended by the colonial veterinary surgeon of the Cape Colony as the best and safest remedy. His directions are to take 1 pound avoirdupois of pure bluestone, powder it fine, and dissolve in 42 whisky bottlefuls (9½ United States gallons) of warm water. It is better to first dissolve the bluestone in 2 to 4 bottlefuls of boiling water, then add the remaining quantity in cold water, and mix thoroughly. This solution is given in the following sized doses:

Lambs 3 months old	¾ ounce
Lambs 6 months old	1½ ounces
Sheep 12 months old	2½ ounces
Sheep 18 months old	3 ounces
Sheep 24 months old	3½ ounces

In making up the solution only clear blue crystals of bluestone should be used. Bluestone with white patches or crusts should be rejected. It is especially important that the bluestone and water be accurately weighed and measured, and that the size of the dose be graduated according to the age of the sheep.

GASOLINE.

Gasoline is one of the most popular remedies for stomach worms which has been used in this country and has the particular advantage of being readily obtained. It is important to repeat the dose if the gasoline treatment is employed, and it is usual to administer the treatment on three successive days, as follows:

The evening before the first treatment is to be given the animals are shut up without feed or water and are dosed about 10 o'clock the next morning. Three hours later they are allowed feed and water, and at night they are again shut up without feed or water. The next morning the second dose is given, and the third morning the third dose, the treatment before and after dosing being the same in each case.

The sizes of the doses are as follows:

Lambs	¼ ounce
Sheep	½ ounce
Calves	½ ounce
Yearling steers	1 ounce

The dose for each animal is measured and mixed separately in linseed oil, milk, or flaxseed tea, and administered by means of a bottle or drenching tube. Gasoline should not be given in water.

OTHER REMEDIES.

Many other remedies in addition to those mentioned here have been used in the treatment of stomach-worm disease with more or less success. Several of the coal-tar dips on the market are recommended by the manufacturers for the treatment of worms and the action of some of them is much the same as that of coal-tar creosote.

It is not the policy of the department to recommend the use of any particular proprietary remedy, and as the action of some such agents is very uncertain it is suggested that, if it is desired to use them, they be used with caution and only in accordance with the printed directions on the package. Whatever remedy is used, it is wise to test it on two or three animals before the entire flock is dosed.

Approved:

JAMES WILSON,
Secretary of Agriculture.

Washington, D. C., February 8, 1907.

SCAB IN SHEEP.

Extracts from U. S. Department of Agriculture, Farmers' Bulletin No. 159.

INTRODUCTION.

The disease commonly called sheep scab is one of the oldest known, most prevalent and most injurious maladies which affect sheep. It is a contagious skin disease caused by a parasitic mite. Investigation has shown that the disease is not hereditary, as the parasites which cause it live on the external surface of the body. It is possible, however, for a lamb to become infected from a scabby mother at the moment of birth or immediately thereafter. The treatment must consist of external dies to "purify the blood."

The disease is one of the most serious drawbacks to the sheep industry and results in enormous financial losses. The losses are due to the shedding of the wool, failure of condition, and the death of the sheep. Yet, despite its insidious nature, its ease of transmission, its severe effects and its prevalence in certain localities, it is a disease which yields readily to proper treatment. If all the sheep owners of the country would dip sheep regularly and thoroughly, there is no reason why this scourge should not be totally eradicated from the United States.

In many cases, particularly among owners of small flocks, there are erroneous ideas prevalent regarding the exact nature of the disease and the methods by which it may be eradicated. It is to meet the demand for information on the subject that this bulletin has been prepared.

CAUSE OF COMMON SHEEP SCAB.

Sheep scab is a strictly contagious disease. Common sheep scab is caused by that species of mites technically known as Psoroptes communis. Parasites of this species cause scab in horses, cattle, sheep, goats and rabbits; but for each of these species of animals there appears to be a distinct variety of this parasite. Although it is more or less difficult to distinguish between these varieties, they differ somewhat in size; also it is found that the Psoroptes communis of the sheep does not cause scab of the horse, ox or rabbit, nor, on the other hand, does the Psoroptes communis of the horse or rabbit cause scab of the sheep. Naturalists, therefore, distinguish the parasite of sheep scab by the name of Psoroptes communis var. ovis.

The parasite of this disease is one of the larger mites and is quite easily seen with the naked eye. The adult female is about one-fortieth inch long and one-sixtieth inch broad; the male is one-fiftieth inch long and one-eightieth inch broad. These mites are discovered more readily and more clearly on a dark than on a light background, and for that reason the crusts from the affected skin are often placed upon black paper and kept in the sunshine for a few minutes in order to reveal the parasites crawling about.

The Psoropt inhabits the regions on the surface of the body which are most thickly covered with wool—that is, the back, the sides, the rump, and the shoulders. Its presence is the cause of the true body scab on sheep, and of all parasitic mites it produces the most serious injuries.

DESCRIPTION OF COMMON SHEEP SCAB.

The mites of common, or body, scab—that is, the Psoroptes—prick the skin of the animal to obtain their food, and probably insert a poisonous saliva in the wound. Their bites are followed by intense itching, with irritation, formation of papules, inflammation, exudation of serum, and the formation of crusts, or scabs under and near the edge of which the parasites live. As the parasites multiply they seek the more healthy parts, spreading from the edges of the scab already formed, thus extending the disease. The sheep are restless; they scratch and bite themselves and rub against posts, fences or stones, or against other members of the flock. This irritation is particularly noticeable after the animals have been driven, for the itching is more intense when the sheep become heated. The changes in the skin naturally result in the falling of the wool. At first slender "tags" are noticed; the fleece assumes the condition known as "flowering;" it looks tufty or matted, and the sheep pulls out portions with its mouth or leaves tags on the objects against which it rubs. Scabs fall and are replaced by thicker and more adherent crusts. The skin finally becomes more or less bare, parchment like, greatly thickened, furrowed and bleeding in the cracks. With shorn sheep, especially, a thick, dry, parchment-like crust covers the greatly tumified skin. Ewes may abort or bear weak lambs.

PARTS OF BODY AFFECTED BY SCAB.

When sheep are kept in large numbers the chances for infection are naturally greater and the disease may begin on almost any part of the body. Generally, however, it affects the parts which are covered with wool. When the sheep are fat and the wool has a large amount of yolk, the progress of the disease may be slow; usually beginning on the upper part of the body, withers, and back; it extends slowly, but none the less surely, and in ever-increasing areas, to the neck, sides, flanks, rump, etc. In two or three months the entire body may be affected.

CONTAGIOUSNESS OF SCAB.

Common scab is exceedingly contagious from one sheep to another, and may in some cases show itself within about a week after healthy sheep have been exposed to infection. The contagion may be direct, by contact of one sheep with another; or indirect, from tags of wool or from fences, posts, etc., against which scabby sheep have rubbed, or from the places where the sheep have been "bedded down." One attack of scab does not protect sheep from later attacks. Transmitted to man, sheep scab may produce a slight spot on the skin, a point which is sometimes taken advantage of for the purpose of diagnosis. In case of suspected scab, one of the crusts is bound lightly on the arm. After a short time an itching sensation is felt and the mites are found on the skin. Transmitted to horses, cattle or goats, common sheep scab fails to develop.

CHANCES FOR RECOVERY FROM SCAB.

Cases of apparent spontaneous recovery are rare. Usually when proper methods of treatment are not adopted the disease increases, leads to anaemia, emaciation, exhaustion and death and may result in a loss of from 10 to 80 per cent of the flock. Scab is favored by season when the wool is longest, and by huddling or overcrowding the animals; also race, energy, temperament, age, state of health, length, fineness and abundance of wool, and the hygienic conditions of the surrounding influence the course and termination of the disease. Young, weak, closely inbred animals and those with long, coarse wool will most quickly succumb. Unhealthy localities, damp climate and poorly ventilated sheds favor the disease. Pure or mixed Merino sheep succumb sooner than certain other breeds. The mortality varies according to conditions, but is highest in autumn and winter. When owners are careless the death rate may be very high; if untreated the sheep may die in two or three months. Hygienic conditions, good food, and cool, dry atmosphere tend to check the disease. Sheep sheds should accordingly be well ventilated and open to light and sunshine. With proper attention to hygienic conditions and thorough dipping a positive cure can be guaranteed.

VITALITY OF THE SCAB PARASITE.

Taken from the sheep, the mites possess a remarkable vitality. It is generally stated that, kept at a moderate temperature on portions of scab, the adults may live from four to twenty days, but they will occasionally live much longer; cases are on record where they have lived three, four or even six weeks when separated from sheep; if the atmosphere is dry they will generally die in about fifteen days, but death is often only apparent, for the mites may sometimes be revived by warmth and moisture even after six or eight weeks; the fecundated females are especially tenacious of life. Various rather contradictory statements may be found regarding their resistance to cold. Krogmann states that they may live at a temperature of 10° C. (14° F.) for twenty-eight days; other authors that they die at 50° C. (122° F.) They are said to have been kept alive in cold water for six days and in warm water for ten days. Several authors admit, however, that the parasites are usually killed by a soaking rain; though it is claimed that in damp, dark stables they "may live for months."

Experience has shown that in some cases apparently healthy sheep have become infected in places where no sheep have been kept for four, eight, twelve or even twenty-four months. The conditions underlying this infection are not thoroughly understood. Possibly some of the eggs have retained their vitality a long time and then hatched out; possibly the vitality of the fecundated female has also played a role; while it is not at all improbable that an entirely new infection has accidentally been introduced by birds or other animals. Certain authors of high standing scout the idea that birds can introduce an infection of scab, but there is no reason why birds should not do this, and there are some reasons for believing that they do. It has been noticed at the experiment station farm of the bureau, for instance, that crows delight in perching on the backs of scabby sheep and picking at the scab; while so doing it is only natural that small tags of wool would adhere to their feet and thus scatter scab. The fact that snails cling to birds' feet and are carried long distances is too well established to need discussion, and it is very probable that many of the cases where sheep are supposed to have become infected with scab on pastures which have not been occupied for one or two years are in reality cases of fresh infection by means of birds. From the data at hand, while it may be admitted that in some cases, under favorable conditions, the mites may live from spring to fall, it is scarcely within the limits of probability that either the scab mites or their eggs will live through a winter when separated from the sheep and exposed to the elements.

All matters connected with the vitality of the scab mite have an important bearing in explaining cases of indirect infection on roads over which scabby sheep have been driven, or in fields and sheds where they have been kept. From the facts now at hand, the following important rules can be presented:

(1) Scabby sheep should never be driven upon a public road; (2) sheds in which scabby sheep have been kept should be thoroughly cleaned, disinfected and aired, and should be left unused for at least four weeks (better two months) before clean sheep are placed in them; (3) fields in which scabby sheep have been kept should stand vacant at least four weeks (better six or eight) before being used for clean sheep; (4) a drenching rain will frequently serve to disinfect a pasture, but it is well to whitewash the posts against which scabby sheep have rubbed.

Even after observing the precautions here given it is not possible to absolutely guarantee that there will be no reinfection, but the probabilities are against it.

CONDITIONS WHICH MAY BE MISTAKEN FOR SCAB.

Any parasite or condition which causes an itching and thus leads the sheep to scratch themselves or any abnormal condition of the skin, may be temporarily mistaken for scab; but if the rule is held in mind that no scab is possible without the presence of the specific parasites, it will be easily determined whether scab is present or not. The following are the more important cases to be considered:

(1) Itching due to other parasites, such as common "sheep tick," true ticks and lice, may be distinguished from scab by finding the parasites. The dipping used for treating scab will also kill sheep ticks and lice.

(2) Inflammation of the sebaceous glands.—This may be mistaken for common scab. It appears most frequently in autumn. There is a severe itching, the skin is red and sensitive and is covered with a strong-smelling, yellowish, viscid yolk; tufts of wool may be shed. It may be cured, after shearing, with any starchy lotion.

(3) Rain rot.—In rainy weather an eruption may appear on the skin which might be mistaken for scab. There is, however, no parasite present; itching is absent, and the trouble disappears when dry weather comes.

TREATMENT OF SCAB.

Proper hygienic conditions alone, though of importance in connection with the subject of treatment, can not be relied upon to cure scab. The only rational treatment consists in using some external application which will kill the parasites. Formerly medicines were given internally and even within a few years past it has been claimed that feeding sulphur to sheep will cure the disease. The statements regarding sulphur were such as to lead the department to try the experiment, which, however, was soon abandoned as unsuccessful. The external application of scab cures is in various ways made known as hand dressing, hand curing, spotting, pouring, smearing and dipping. Of these methods dipping is by far the most satisfactory.

HAND APPLICATIONS.

While common scab is the disease treated in this bulletin, as a matter of information it may be stated that in case of head scab or in light cases of foot scab, which appear to be rather rare, hand applications may be resorted to and will frequently suffice. A non-poisonous ointment may be made by taking 4 ounces of oil of turpentine, 6 ounces of flowers of sulphur and 1 pound of lard. Mix the ingredients at a gentle heat and rub in well with the hands or with a brush, at the same time breaking the crusts. The simple sulphur ointment may be made of 1 part of sulphur and 4 parts of lard; one-fourth part of mercurial ointment may be added. Few remedies are so useful in mange in dogs, ringworm and other itching complaints as sulphur iodide, and it may well be given a trial on head scab. It is prepared as follows: Mix in a nonmetallic vessel, as a porcelain mortar, 4 ounces of iodine with 1 ounce of sublimed sulphur, gently heating the mixture until it liquifies; the red-brown liquid upon cooling becomes a gray-black crystalline mass, insoluble in water, but soluble in glycerine and fats, with 8 or 10 parts of which it is mixed for ointments or liniments. An ointment of flowers of sulphur and carbolated vaseline would also probably give good results. One author advises for head scab and foot scab a mixture consisting of 1 part of mercurial ointment and 11 parts of sulphur ointment. Foot scab and head scab would also probably respond to treatment with the various dips used for common scab.

Hand dressing is not recommended for common scab; in fact, it must be looked upon as directly responsible for a considerable amount of the disease, since it is too often relied upon to cure the diseases, while in reality it is only a paliative. The only condition under whch hand dressings can be advised is in case scab is discovered in one or two sheep of a flock during severe winter weather, when dipping would be impracticable. In that event the infected sheep should be immediately isolated from the flock; and they might be hand dressed, if desired, in order to hold the disease in check. It can not be too strongly insisted upon that "pouring," "spotting," etc., are only expensive and temporizing methods of dealing with scab.

"Pouring" is done as follows: Part the wool on the back by making a furrow with the finger from the head to the tail; furrows are also made along the shoulders and thighs to the legs and on the sides; pour the ointment or dip in these furrows. A still better plan is to pour the warm dip from a coffee pot or tea pot directly on the affected parts, rubbing it well in with the hand, a brush or a corncob. It must be repeated for emphasis, however, that such treatment can not be relied upon and should be used only in emergency cases when dipping is impracticable.

A mercurial ointment may be made as follows: (A) Dissolve 1 pound of resin in one-half pint of oil of turpentine; (B) mix 1 pound of mercurial ointment with 6 pounds of lard, with gentle heat; and (C) when cool, mix the two compounds, A and B. It should be remembered that mercurial ointments are not unattended with danger, and on this account it is better to prepare a small amount of dip and pour it on the affected part as described above.

DIPPING.

By far the most rational and satisfactory and the cheapest method of curing scab is by dipping the sheep in some liquid which will kill the parasites. The dipping process is as follows:

(1) Select a dip containing sulphur. If a prepared "dip" is used which does not contain sulphur it is always safer to add about 16½ pounds of sifted flower of sulphur to every 100 gallons of water, especially, if after dipping, the sheep have to be returned to the old pastures.

(2) Shear all the sheep at one time and immediately after shearing confine them to one-half the farm for two to four weeks. Many persons prefer to dip immediately after shearing.

(3) At the end of this time dip the entire flock a second time.

(4) Ten days later dip the entire flock a second time.

(5) After the second dipping place the flock on a portion of the farm from which they have been excluded during the previous four or five weeks.

(6) Use the dip at a temperature of 100° to 110° F.

(7) Keep each sheep in the dip for two minutes by the watch—do not guess at the time—and duck its head at least once.

(8) Be careful in dipping rams, as they are more likely to be overcome in the dip than are the ewes.

(9) Injury may, however, result to pregnant ewes, which must, on this account, be carefully handled. Some farmers arrange a stage, with sides, to hold the pregnant ewes, which is lowered carefully into the vat, and raised at the proper time.

(10) In case a patent or proprietary dip, especially an arsenical dip, is used, the directions given on the package should be carried out to the letter.

CHOICE OF A PREPARATION FOR DIPPING.

Numerous different sheep dips are recommended by various parties and undoubtedly many of them are efficacious; few can be named which some persons do not consider far superior, and other persons consider far inferior, to all dips known; few can be found which have not cured cases of scab, and probably none can be named with which failures have not been reported. Under these circumstances the farmer should not be deceived by exaggerated statements in either extreme. He should know the composition of the material he is using. If he desires to use a ready-made dip, let him inform himself of its exact nature in order to prevent impositions and guard against dangers. He would do well to refuse to purchase any prepared mixture which does not bear on the package a printed statement of the ingredients and their proportions, which the manufacturer guarantees are to be found in that package; he would also do well to avoid any compound which irresponsible parties advertise as "the only sure cure for scab," etc.

SUCCESS WITH HOME-MADE DIPS.

While a remedy should not be condemned simply because it is prepared ready for use, the value of home-made dips is insisted upon, and attention is called to the fact that it was almost entirely through home-made mixtures that scab was eradicated from certain of the Australian colonies. As statements have been made that scab was eradicated from the English colonies by killing the scabby sheep or by the use of prepared dips, it may be well to say that these statements are erroneous. An act was passed in New South Wales about 1851 for the slaughter of scabby sheep, and a few remaining straggling flocks were destroyed under that act; but on the reappearance of scab in that colony in 1863, by infection from Victoria, the act was repealed and the whole of the scabby sheep, about 400,000, were completely cured by means of tobacco and sulphur.

IMPORTANCE OF PROPER USE OF DIP.

Whatever dip is selected, the farmer should not forget that there are two ways of using it. One way is to prepare and use it in accordance with the directions given; the other way is to attempt to economize time, labor or money by using it in weaker proportion than advised, by hurrying the sheep through the swim, or by later placing the dipped sheep under unfavorable conditions. If the former method is adopted with any of the established dips the treatment ought to be followed with favorable results; if the latter method is adopted the farmer himself must assume the responsibility of failure, no matter what remedy he decides to use. Every farmer should therefore remember that when he has decided upon the dip he is to use his work has only begun; to use it properly is fully as important as to use a dip at all.

PRELIMINARY QUESTIONS IN CHOOSING DIP.

The home-made dips which are most commonly used have either tobacco or sulphur as their basis, while the prepared dips contain tobacco, sulphur, arsenic, carbolic acid, etc., as curative agents.

In selecting a dip several points should be considered. First of all, the question of expense will naturally arise; next, the question as to whether or not scab actually exists in the flock to be dipped, or whether or not the dipping is more of a precautionary matter, or for the sake of cleansing the animal's skin. The facilities at hand, the setback to the sheep and the length of the wool are also matters for consideration, as well as the pastures into which the dipped sheep are to be placed. Notwithstanding statements to the effect that a given dip can be used under all conditions, the above questions are evidently important.

Expense—In estimating the expense one should consider not only the actual outlay for the ingredients of the ooze, but the cost of fuel and labor, the injury, if any, to the sheep, and the liability of not curing the disease. It is much more economical to use an expensive dip and cure scab than it is to use a cheap dip and fail to cure it. To illustrate with a well-known home-made dip: A lime and sulphur dip may be made in ten to thirty minutes, with but little fuel and little labor, which may or may not cure the disease, and which will surely do great injury to the wool; or a lime and sulphur dip may be made in several hours' time at the expense of considerable fuel, labor and patience, which can be relied upon to cure scab, and which will do little or no injury to the wool. The first dip is cheap, but not economical; the second dip is more expensive, but more economical.

Does Scab Exist in the Flock?—Every farmer should ask himself this question before he selects his dip. If scab does not actually exist and the wool is long, the dipping in this case simply being a matter of precaution, it is best not to select a dip containing lime. The use of the lime and sulphur dips is therefore not advised simply as precautionary dressing for healthy long-wooled sheep. On the contrary, the use of any dip containing lime, as a precautionary measure, should be avoided.

The Facilities at Hand for Preparing Dip—If fuel is very scarce, so that it is impracticable to boil the mixture for at least two hours, the lime and sulphur dips should not be selected. A tobacco and sulphur dip, as well as many of the better proprietary dips, can be made without the necessity of lengthy boiling and should be given preference whenever facilities for boiling are not at hand.

The length of the wool is discussed under the head, "Lime and sulphur dips."

The Pastures—In case it is necessary to place the dipped sheep on the same pastures they occupied before being dipped, it is always best to use a dip containing sulphur. If a proprietary dip is selected under those circumstances it is suggested that sulphur be added, about 1 pound of flower of sulphur to ever 6 gallons of dip. In case it is possible to utilize fresh pastures after dipping, the use of sulphur is not so necessary, but is always advisable. The object in using sulphur is to place in the wool a material which will not evaporate quickly, but will remain there for a longer period of time than the scab parasites ordinarily remain alive away from their hosts. By doing this the sheep are protected against reinfection.

KINDS OF DIPS.

Sulphur is one of the oldest known remedies for scab. As a scab eradicator it must be placed among the best substances at our disposal. It is one of the constituents of certain proprietary dips, but its use to the farmer is best known in the tobacco and sulphur dip and in the lime sulphur dip. These home-made mixtures, as already shown, are the two dips which have played the most important roles in the eradication of scab from certain English colonies, and their use, especially the use, as well as the abuse, of lime and sulphur, is quite extensive in this country.

THE TOBACCO AND SULPHUR DIP.

The formula, as given here and as adopted by the New South Wales sanitary authorities, appears to have first been proposed in 1854 by Mr. John Rutherford. Regarding its success in Australia, Dr. Bruce, chief inspector of sheep for New South Wales, makes the following statements:

"On the Hopkins Hill Station Mr. Rutherford, with two dressings of these ingredients, then cured over 52,000 sheep which had been infected for eighteen months; and he also subsequently cured with two dippings the sheep on Mount Fyans Station, where they were in a most wretched state, and had been scabby for more than three years, and that, too, in both cases, without destroying a single hurdle or yard or removing any of the sheep from their old runs. Since then millions of scabby sheep have been permanently cured in Victoria in the same way and in South Australia and New South Wales hundreds of thousands of scabby sheep have also been cleaned with tobacco and sulphur. In fact, this dressing has the credit of having eradicated scab from the flocks of both the latter colonies, and there are good grounds for asserting that had this remedy not been known and used neither colony would be, as they both are now, almost entirely free from the scourge. Judging, therefore, from the experience of the three colonies, there is no medicant or specific yet known that can be compared with tobacco and sulphur as a thorough and lasting cure for scab in sheep."

The proportions adopted by Rutherford and afterwards made official by the scab sanitary authorities are:

Tobacco leaves	pound	1
Flowers of sulphur	pound	1
Water (original formula, 5 gallons imperial, equivalent to 6 United States gallons)	gallons	6

The advantage of this dip lies in the fact that two of the best scab remedies, namely, tobacco (nicotine) and sulphur, are used together, both of which kill the parasites, while the sulphur remains in the wool and protects for some time against reinfection. As no caustic is used to soften the scab, heat must be relied on to penetrate the crusts.

Directions for preparing tobacco and sulphur dip—The tobacco and sulphur dip is prepared as follows:

A. Infusing the tobacco: Place 1 pound of good leaf or manufactured tobacco for every 6 gallons of dip desired in a covered boiler of cold or lukewarm water and allow to stand for about twenty-four hours; on the evening before dipping bring the water to near the boiling point (212° F.) for an instant, then remove the fire and allow the infusion to stand over night.

B. Thoroughly mix the sulphur (1 pound to every 6 gallons of dip desired) with the hand in a bucket of water to the consistency of gruel.

C. When ready to dip thoroughly strain the tobacco infusion (a) from the leaves by pressure, mix the liquid with the sulphur gruel; (b) add enough water to make the required amount of dip and thoroughly stir the entire mixture.

All things considered, the tobacco and sulphur is as good a dip as is known at the present time.

LIME AND SULPHUR DIPS.

Various formulas for lime and sulphur dips—Under the term "lime and sulphur dips" are included a large number of different formulas requiring lime and sulphur in different proportions. In general practice all of these dips are spoken of as "the lime sulphur dip," but in reality each separate formula represents a separate dip.

To give an idea of the variety of the lime and sulphur dips, the following list is quoted, the ingredient reduced in all cases to avoirdupois pounds and United States gallons:

1. The original "Victorian lime-and-sulphur dip" proposed by Dr. Rowe, adopted as official in Australia:

Flowers of sulphur	pounds	20 5-6
Fresh slaked lime	pounds	10 5-12
Water	gallons	100

2. South African (Cape Town) official lime-and-sulphur dip:

Flowers of sulphur (minimum)	pounds	15
Unslaked lime	pounds	15
Water	gallons	100

3. South African (Cape Town) official lime-and-sulphur dip February 4, 1897:

Flowers of sulphur	pounds	20 5-6
Unslacked lime	pounds	16 2-3
Water	gallons	100

4. Nevada lime-and-sulphur dip:

Flowers of sulphur	pounds	16 2-3
Lime	pounds	33 1-3
Water	gallons	100

5. Fort Collins lime-and-sulphur dip:

Flowers of sulphur	pounds	33
Unslaked lime	pounds	11
Water	gallons	100

6. A mixture used extensively under the direction of this bureau contains the same proportions of lime and sulphur (namely 1 to 3) as the Fort Collins dip, but the quantities are reduced to—

Flowers of sulphur	pounds	24
Unslaked lime	pounds	8
Water	gallons	100

In case of fresh scab formula No. 6 will act as efficaciously as the dips with a greater amount of lime, but in cases of very hard scab a stronger dip, as the Fort Collins dip, should be preferred, or, in unusually severe cases, an ooze with more lime in proportion to the amount of sulphur, such as the Victorian (No. 1), the South African (No. 3) or the Nevada (No. 4) dip might be used.

Dangerous formulas—Among the dangerous formulas for lime and sulphur dips are the following:

a. California lime-and-sulphur dip:

Flowers of sulphur	pounds	100
Lime	pounds	25
Water	gallons	100

A very dangerous misprinted formula is found in several books and journals, probably due to a typographical error, which specifies a much larger proportion of lime than any of those mentioned above. Thirty-three pounds of lime to 100 gallons of water is the largest proportion admissible under any circumstances, and 16 2-3 pounds is as much as should be used without expert advice and supervision.

Many other formulas might be cited, but these are enough to show the great variations in the dips which have been used, and to prove that when a party simply states that "lime and sulphur" is an excellent dip, or that it is a dangerous dip, or that he has succeeded or failed with it, or that the lime and sulphur dip is injurious to the wool, his statements can not be taken as definite unless he also states which lime and sulphur dip he used and how he used it.

Prejudice against lime and sulphur dip—In the first place it is frequently asserted that lime and sulphur does not cure scab. Experience in Australia and South Africa, as well as in this country, has shown beyond any doubt that a lime and sulphur dip, when properly proportioned, properly prepared and properly used, is one of the best scab eradicators known. Cases of its failure have been due to careless or improper methods of its preparation and use.

It is also claimed by some that it produces "blood poisoning." The cases of death following the use of lime and sulphur dips have been infinitesimally few, considering the number of sheep dipped in these solutions, when compared with the deaths which have been known to follow the use of certain proprietary dips. The details of such accidents, so far as they have been reported, have not shown that death was due to any properly prepared and properly used lime and sulphur dip. If the formula of 100 pounds of sulphur, 150 pounds of lime and 100 gallons of water has killed animals, that is no argument against the formula 33 pounds of sulphur, 11 pounds of lime and 100 gallons of water, but simply shows that the former formula is too strong. The statement is frequently made that "shear-cut" sheep die when dipped immediately after shearing in a lime and sulphur dip which has stood for some time. It is highly probable that the cases of so-called "blood poisoning" of shear-cut sheep are generally due to an infection of bacteria in stale dip containing putrefying material. It is, therefore, safer to use a fresh supply of dip and to allow a short time to elapse after shearing before dipping. Some cases of death are also said to have occurred after using a lime and sulphur dip made in brass kettles.

In an experiment by the bureau of animal industry, 5 c. c. of a clear lime and sulphur ooze (formula No. 6) has been injected under the skin of a sheep without producing any evil effects.

It is also claimed that after the use of lime and sulphur dip ewes fail to recognize their lambs and lambs fail to recognize their mothers. This objection can, however, be made to other dips also.

The greatest objection raised against the use of lime and sulphur dip is that it injures the wool. After years of extensive experience with properly prepared dip, its injury to the wool is strongly and steadfastly denied by the agricultural department of Cape Colony. It is, however, believed that there is a certain amount of justice in this objection to lime and sulphur as generally used; unless, therefore, lime and sulphur can be used in a way which will not injure the wool to an appreciable extent, we should advise against its use in certain cases; in certain other cases the good accomplished far outweighs the injury it does.

An examination into this damage and its causes shows that the usual time for dipping sheep is shortly after shearing, when the wool is very short; whatever the damage at this time, it can be only slight and the small amount of lime left in the wool will surely do but little harm.

In full fleece, lime and sulphur will cause more injury. In Australia the deterioration was computed by wool buyers at 17 per cent, although in Cape Colony the department of agriculture maintains that is properly prepared, and if only the clear liquid is used, the sediment being thrown away, the official lime and sulphur formula will not injure the long wool. In our experiments we have found some samples of wool injured by dipping, while on other samples no appreciable effect was noticeable.

It must not be forgotten that other conditions, such as variations in the feed, pasturing on alkaline land, ill health from any cause, etc., may cause brittleness of the wool, which might be mistaken for the effects of lime and sulphur.

If a lime and sulphur dip is used care must be taken to give the solution ample time to settle; then only the clear liquid should be used, while the sediment should be discarded. In some of our tests on samples of wool we have found that the dip with sediment has produced very serious effects, even when no appreciable effects were noticed on samples in the corresponding clear liquid.

Experience has amply demonstrated that a properly made and properly used lime and sulphur dip is one of the cheapest and most efficient scab eradicators known, but its use should be confined to flocks in which scab is known to exist, and to shorn sheep, with the exception of very severe cases of scab in unshorn sheep. It should only be used when it can be properly boiled and settled. The use of the lime and sulphur dips in flocks not known to have scab, especially if the sheep are full fleeced, can not be recommended; in such cases tobacco or sulphur and tobacco is safer and equally good.

If a lime and sulphur dip is chosen it is better for ordinary cases to use the solutions containing a small amount of lime and three times as much sulphur as lime, as the Fort Collins formula, 33 pounds of sulphur and 11 pounds of lime to every 100 gallons of water, or the bureau of animal industry formula (No. 6), 24 pounds of sulphur and 8 pounds of lime to 100 gallons of water, rather than the formula with a greater proportion of lime.

If the stronger solutions, as the Victorian formula (No. 1), or the present South African formula (No. 3), or the Nevada formula (No. 4) are used at all, their use should be confined to unusually severe outbreaks. Under no circumstances should the California formula be used. It is too strong and is liable to kill the sheep.

Another objection raised to the use of lime and sulphur is the claim that the "shrinkage" in weight of the sheep after the use of these dips is greater than after the use of other dips. In reply to this objection, it can only be repeated that such has not been the experience of Professor Gillette in his experiments in Colorado. The burden of proof for the opposite statement, with exact statistics, rests upon those who raise the objection.

Still another objection advanced against lime and sulphur is that its continued use year after year will gradually decrease the annual clip. Whether this objection be valid or not, it is scarcely necessary to discuss it in detail in this bulletin; for, in the first place, the average sheep raiser of this country does not keep the same sheep "year after year," but sends most of his sheep (breeding ewes and the rams excepted) to market. Hence there will usually be little opportunity to injure the wool of a given animal "year after year." In the next place, if lime and sulphur are properly used one year, so that the flock is freed from scab, and if reinfection be guarded against it will not be necessary to resort again to lime and sulphur.

These objections have been reviewed somewhat in detail in order to place the facts, so far as obtainable, before the farmer. It is not particularly advised by the department that lime and sulphur be used in this country in preference to sulphur and tobacco, or tobacco alone, or any other effective dip. In fact, it is hoped that within ten years there will be no further use for the lime and sulphur dips. At the same time, where it is a choice, on the one hand, between the lime and sulphur, with a slight deterioration in the value of the wool, but an absence of scab, and, on the other hand, the use of a secret and ineffective patent dip, with the continual presence of scab, and hence permanent deterioration in wool, there can be no doubt that the decision should be in favor of lime and sulphur (properly prepared and properly used).

All things considered, where it is a choice between sacrificing the weight of sheep and to some extent the color of the wool, by using tobacco and sulphur, and sacrificing the staple of the wool by using lime and sulphur, the farmer should not hesitate an instant in selecting tobacco in preference to lime. The loss in weight by using tobacco and sulphur is not much greater than the loss in using lime and sulphur, while the loss in staple is of more importance than a slight discoloration.

Preparation of lime and sulphur mixture—Almost as many different methods of preparing the liquid exist as there are different formulas, some of the methods laying great stress upon sifting both the lime and the sulphur, others laying great stress upon allowing the liquid to settle, others leaving out of consideration both of these points. The method which has been found in the department to be the easiest and most satisfactory is as follows:

A. Take 8 to 11 pounds of unslaked lime, place it in a mortar box or a kettle or pail of some kind and add enough water to slake the lime and form a "lime paste" or "lime putty."

Many persons prefer to slake the lime to a powder, which is to be sifted and mixed with sifted sulphur. One pint of water will slake three pounds of lime, if the slaking is performed slowly and carefully. As a rule, however, it is necessary to use more water. This method takes more time and requires more work than the one given above and does not give any better results. If the boiled solution is allowed to settle the ooze will be equally as safe.

B. Sift into this lime paste three times as many pounds of flowers of sulphur as used of lime and stir the mixture well. Be sure to weigh both the lime and the sulphur. Do not trust to measuring them in a bucket or to guessing the weight.

C. Place the sulphur lime paste in a kettle or boiler with about 25 to 30 gallons of boiling water and boil the mixture for two hours at least, stirring the liquid and sediment. The boiling should be continued until the sulphur disappears, or almost disappears from the surface; the solution is then of a chocolate or liver color. The longer the solution boils the more the sulphur is dissolved, and the less caustic the ooze becomes. Most writers advise boiling from thirty to forty minutes, but the bureau obtains a much better ooze by boiling from two to three hours, adding water when necessary.

D. Pour the mixture and sediment into a tub or barrel placed near the dipping vat and provided with a bunghole about 4 inches from the bottom and allow ample time (two or three hours, or more if necessary), to settle.

The use of some sort of settling tank provided with a bunghole is an absolute necessity, unless the boiler is so arranged that it may be used both for boiling and settling. An ordinary kerosene oil barrel will answer very well as a small settling tank. To insert a spigot about 3 or 4 inches from the bottom is an easy matter. Draining off the liquid through a spigot has the great advantage over dipping it out, in that less commotion occurs in the liquid, which therefore remains freer from sediment.

E. When fully settled draw off the clear liquid into the dipping vat and add enough warm water to make 100 gallons. The sediment in the barrel may then be mixed with water and used as a disinfectant, but under no circumstances should it be used for dipping purposes.

A double precaution against allowing the sediment to enter the vat is to strain the liquid through ordinary bagging as it is drawn from the barrel.

In watching the preparation of lime and sulphur dips by other parties the bureau investigators have found some persons who laid great stress upon stirring the sediment well with the liquid before using the ooze. This custom is undoubtedly responsible for a great deal of the prejudice which exists at present against lime and sulphur dips; and, considering the preparation of these dips in this way, there is no wonder at the immense prejudice against them in certain quarters.

Position of the bureau on lime and sulphur dips—To summarize, the position of the bureau of animal industry on the lime and sulphur dips is as follows: When properly made and properly used these dips are second to none and equaled by few as scab eradicators. There is always some injury to the wool resulting from the use of these dips, but when properly made and properly used upon shorn sheep it is believed that this injury is so slight that it need not be considered; on long wool the injury is greater and seems to vary with different wools, being greater on a fine than on a coarse wool. This injury consists chiefly in a change in the microscopic structure of the fiber, caused by the caustic action of the ooze. When improperly made and improperly used the lime and sulphur dips are both injurious and dangerous and in these cases the cheapness of the ingredients does not justify their use. In case scab exists in a flock and the farmer wishes to eradicate it, he can not choose a dip which will bring about a more thorough cure than will lime and sulphur (properly made and properly used) although it will be perfectly possible for the farmer to find several other dips which will, when properly used, be nearly or equally as effectual as any lime and sulphur dip. There is no dip to which objections can not be raised.

POTASSIUM SULPHIDE DIP.

It has been proposed by several parties to use a potassium sulphide dip and such a dip has been tried to some extent. As yet, however, judgment upon it must be reserved. Gillette tried a dip composed of 4½ pounds of potash lye, 16 pounds of flowers of sulphur and 100 gallons of water and promises further reports on its effectiveness. Sheep dipped in this liquid gained but 6 pounds, namely, the same as the sheep treated with carbolic dip.

TOBACCO DIPS.

The active principle of tobacco, upon which the tobacco dips depend for their action, is a poisonous substance known as nicotine. This poison when applied to animals externally in too strong solutions may cause nausea, fainting and even death. The dog and rabbit are particularly susceptible to its effects. Diluted to about thirty-three one-thousandths to sixty one-thousandths of 1 per cent makes it a slow but sure acting and excellent sheep dip.

Unfortunately the percentage of nicotine varies greatly, not only in different kinds of tobacco, but also in different parts of the plant, in different years, and even in different parts of the same package. There is more nicotine in the leaves, for instance, than in the stems. In fermented tobacco there seems to be a certain relation between the amount of nicotine and the amount of juice present, so that in general dry, thin leaves do not contain so much nicotine as thick, "fat" leaves. The variation in percentage of nicotine in different kinds of tobacco is, according to Kissling, 1893, from 4.80 to 068. From four carloads of stems, aggregating 127,273 pounds, one American firm extracted 1,405.43 pounds of nicotine, or 1.104 per cent.

On account of the variation in the amount of nicotine in the different samples of tobacco, it is practically impossible for the farmer to make up an exact desired strength of tobacco dip if he prepares his own mixture of leaves. He can, however, prepare a mixture which will come within the limits suited to kill the scab parasites. If a solution of an exact given strength is desired it will be necessary to buy prepared nicotine or prepared tobacco dips of a guaranteed strength and reduce them to the strength determined upon.

To prepare the tobacco dip from the leaves it is best to use at least 21 pounds of leaves to every 100 gallons of water. Assuming that a tobacco leaf is used from which the farmer might extract 2 per cent of nicotine, the 100 gallons of ooze would contain slightly more than five-hundredths of 1 per cent; to obtain 100 gallons of ooze of thirty-three one-thousandths of 1 per cent strength, it would be necessary to use 21 pounds of tobacco yielding nearly 1.3 per cent nicotine.

Directions for preparing the dip—For every 100 gallons of dip desired take 21 pounds of good prepared tobacco leaves; soak the leaves in cold or lukewarm water for twenty-four hours in a covered pot or kettle; then bring the water to near the boiling point for a moment and, if in the morning, allow the infusion to draw for an hour; if in the evening, allow it to draw over night; the liquid is next strained (pressure being used to extract as much nicotine as possible from the wet leaves) and diluted to 100 gallons per 21 pounds of tobacco. This dip should be used as fresh as possible, as it contains a large amount of organic material which will soon decompose.

The proportions here given—21 pounds of prepared tobacco leaves to 100 gallons of water—have given very satisfactory results, especially in Cape Town colony, where the reports of the scab inspectors accord this home-made tobacco dip third place among the dips officially recognized. In regard to one of the proprietary tobacco dips the Cape Town agricultural department reports as follows:

Highly spoken of by several inspectors. Very efficacious, and improves the quality of the wool, making it soft and pliable. The one thing which militates against its general use is its expense, hindering the poorer farmers from using it. It is allowed to be one, if not the best, of the patent dips in use and also the safest.

By all means the use of a tobacco dip or of the tobacco and sulphur dip, in preference to the lime and sulphur dips, is advised in case the sheep to be dipped show no unmistakable signs of scab.

At present most tobacco dips are made either with the extract of tobacco or with nicotine solution, on account of the convenience of mixing these preparations with water. The regulations of the bureau of animal industry call for 0.05 of 1 per cent of nicotine in a tobacco dip. Sufficient nicotine would therefore be furnished for 100 gallons (about 800 pounds) of dip by 1 pound of a 40 per cent solution of nicotine. The formula for this dip would be:

Nicotine	pound	0.4
Flowers of sulphur	pounds	16
Water	gallons	100

The sulphur should be made into a thin paste with water in a bucket before it is added to the dip in the tank. It can then be poured in slowly with continual stirring, and will not settle to the bottom, as would otherwise be the case. The nicotine solution or tobacco extract should not be added to the dip until just before it is ready for use, and then the dip should be thoroughly stirred, so as to secure a uniform mixture. The dip should on no account be heated above 110° F. after the nicotine solution is added, as heat is liable to evaporate the nicotine and weaken the dip. It will be an easy matter to calculate 100 gallons of water by dividing the quantity of nicotine required in the dip by the proportion of nicotine in the extract. For example, suppose the nicotine solution contains 25 per cent of nicotine, we have $0.40 \div 0.25 = 1.6$. Therefore, in this case it would require 1.6 pounds of nicotine solution for the 100 gallons of dip. Or, if a tobacco extract is used, having, for example, 2.40 per cent of nicotine, the formula would be as follows: $0.40 \div 0.024 = 16.66$, and therefore 16.66 pounds would be required for 100 gallons of dip.

The advantages of the tobacco dip are that it is comparatively cheap, since the farmer can grow his own tobacco; that it is effectual and at the same time not injurious to the wool. The disadvantage of the dip are that it sometimes sickens the sheep; that it also occasionally sickens the persons who use it, especially if they are not smokers; it spoils very rapidly; it causes a greater setback or "shrinkage" than lime and sulphur, but less of a setback than carbolic dips.

ARSENICAL DIPS.

There are both home-made arsenical dips and secret proprietary arsenical dips. It is well to use special precautions with both because of the danger connected with them. One of the prominent manufacturers of dips, a firm which places on the market both a powder arsenical dip and a liquid nonpoisonous dip, recently summarized the evils of arsenical dips in the following manner:

The drawbacks to the use of arsenic may be summed up somewhat as follows: (a) Its danger as a deadly poison. (b) Its drying effect on the wool. (c) Its weakening of the fiber of the wool in one particular part near the skin, where it comes in contact with the tender wool roots at the time of dipping. (d) Its not feeding the wool or stimulating the growth, or increasing the weight of the fleece, as good oleaginous dips do. (e) The danger arising from the sheep pasturing, after coming out of the bath, where the wash may possibly have dripped from the fleece, or where showers of rain, after the dipping, have washed the dip out of the fleece upon the pasture. (f) Its occasionally throwing sheep off their feed for a few days after dipping, and so prejudicing the condition of the sheep. (g) Its frequent effect upon the skin of the sheep, causing excoriation, blistering and hardness, which stiffen and injure the animal, sometimes resulting in death.

Although this manufacturer has gone further in his attack upon arsenic than the bureau of animal industry would have been inclined to do, it must be remarked that when a manufacturer of such dip can not speak more highly of the chief ingredient of his compound than this one has done in the above quotation, his remarks tend to discredit dips based upon that ingredient. It might be added that Bruce, the chief inspector of live stock for New South Wales, says, in respect to arsenical dips, that "arsenic, and arsenic and tobacco (with fresh runs) cured 9,284 and failed with 9,271."

It may be said, on the other hand, that arsenic really has excellent scab-curing qualities; it enters into the composition of a number of the secret dipping powders and forms the chief ingredient in one of the oldest secret dips used. This particular dip has been given second place (with some qualifications) among the officially recognized dips in South Africa. In deference to the opinion of those who prefer an arsenical dip several formulas are quoted here.

Formulas for arsenical dips—Finlay Dun recommends the following: Take 3 pounds each of arsenic, soda ash (impure sodium carbonate) or pearl ash (impure potassium carbonate), soft soap and sulphur. A pint or two of naphtha may be added if desired. The ingredients are best dissolved in 10 to 20 gallons of boiling water, and cold water is added to make up 120 (United States) gallons. The head of the sheep must, of course, be kept out of the bath.

A moisture highly endorsed by certain parties consists of the following ingredients:

Commercially pure arsenic of soda	pounds	14
Ground roll sulphur	pounds	34½
Water	gallons (U. S.)	432

The arsenic of soda is thoroughly mixed with the sulphur before being added to the water.

Precautions in use of arsenical mixtures—Any person using an arsenical dip should bear in mind that he is dealing with a deadly poison. The following precautions should be observed:

(1) Yards into which newly dipped sheep are to be turned should first be cleared of all green food, hay and even fresh litter; if perfectly empty they are still safer. (2) When the dipping is finished the yard should be cleaned, washed and swept and any unused ooze should at once be poured down a drain which will not contaminate food or premises used by any animals. (3) Dipped sheep should remain in an open, exposed place, as on dry ground. (4) Overcrowding should be avoided and every facility given for rapid drying, which is greatly facilitated by selecting fine, clear, dry weather for dipping. (5) On no account should sheep be returned to their grazings until they are dry and all risk of dripping is passed.

Suggestion as to danger—The arsenical formulas given above are copied from the writings of men who have had wide experience in dipping, but this department assumes no responsibility for the efficacy of the dips given or for their correct proportions. Furthermore, as long as efficacious nonpoisonous dips are to be had there is no necessity for running the risks attendant upon the use of poisonous dips.

CARBOLIC DIPS.

A carbolic acid dip may be made at home or may be purchased as a proprietary article. This class of dips kills the scab mites very quickly, but unfortunately the wash soon leaves the sheep, which is consequently not protected from reinfection in the pastures. If, therefore, a carbolic dip is selected, it is well to add flowers of sulphur (1 pound to every 6 gallons) as a protection against reinfection.

The advantages of carbolic dips are that they act more rapidly than the tobacco or sulphur dips and that the prepared carbolic dips are very easily mixed in the bath. They also seem, according to Gillette, to have a greater effect on the eggs of the parasites than either the sulphur or the tobacco dips. The great disadvantages of this class of dips are, first, in some of the proprietary dips, that the farmer is uncertain regarding the strength of material he is using; second, the sheep receive a greater setback than they do with either lime and sulphur or tobacco.

Gillette reports most excellent results from the use of a certain prepared carbolic dip. The department purchased the same dip upon the open market and tested its effects upon the sheep in the proportion recommended by the manufacturer on the label of the package and also in one-half and one-third that strength. In the first and second tests the dip was severe both on the sheep and on the operators. In one case it caused a considerable, though temporary, eruption on the hands and arms of an operator. In all three cases the dipped sheep were almost overcome in the dipping tank and upon recovering themselves ran around the field in an excited manner, bleating loudly and shaking their heads and tails. The eyes were more congested than the writers have ever seen them to be after a lime and sulphur or a tobacco dip.

An objction to some of the proprietary carbolic dips is that the manufacturers themselves aparently are little acquainted with their own mixtures. Their claims are extravagant and their directions often contradictory. It may be admitted that the carbolic dips are promising and that they may have a brilliant future, but they have not had a very brilliant past and this department is inclined to be extremely conservative in regard to them in a guaranteed strength with more explicit directions for use than are to be found in the present circulars. The dip just referred to was certainly more severe in its effects on the sheep than can be justified by its quick action in killing the scab parasites, considering that other equally effective but milder solutions are to be had.

It was also found in the tests (which are not yet fully completed) that the sheep gained less in weight when dipped in certain two of these washes than when dipped in lime and sulphur or in sulphur and tobacco, or in tobacco.

If a carbolic dip is used care must be taken that the ingredients form a thorough emulsion; if a scum arises to the top a soft water should be used.

In justice to this class of dips it is only fair to state that while the views here expressed are entirely in accord with the opinions of some authorities, they do not agree with the views held by others; but they are based upon the material purchased in open market and probably represent the experience of many who have used these dips. The investigations of the bureau of animal industry certainly show that more tests are necessary before this class of dips can be indorsed. It is hoped that these tests may be made in the near future.

One of the prominent carbolic dips was formerly recognized as one of the three official dips in New South Wales, but it has now been stricken from the list. In Cape Town carbolic dips are not much used and in the official reports little is said concerning them.

SETBACK TO THE SHEEP FROM DIPPING.

Dipping often results in a slight setback. If sheep are weighed immediately before dipping and again at the same hour the following day it will be noticed that the weight has changed. There may be a gain, but usually there is a loss varying from ½ to 3½ pounds. The second day there may be also either a gain or a loss. As the weight of sheep varies from day to day, from 1 to 5 pounds in loss or gain, due chiefly to the increase or decrease of the amount of fodder and water in the stomach, the effects of dipping can not be estimated in twenty-four or forty-eight hours. In order to meet statements made concerning loss or gain in weight the bureau of animal industry had sheep dipped at stated intervals and the weights taken from week to week; all the sheep were kept under exactly the same conditions; the dips used were lime and sulphur, tobacco and sulphur and two proprietary carbolic dips.

At the end of about two months, after three dippings, all of the sheep showed a gain with the exception of one of the sheep from the carbolic dip, which lost slightly. The lowest gain among the sheep treated with tobacco dip was 3½ pounds, the highest 11½ pounds. The lowest gain among the sheep treated with lime and sulphur was 7 pounds, the highest 8½ pounds. The lowest gain among the sheep treated with the carbolic dip was 1½ pounds, the highest 3 1-3 pounds, while one animal lost ½ pound. The sheep were given a fourth dipping and at the end of another month showed the following gains and losses over their original weight at first dipping: Sheep treated with tobacco, 9 to 15 pounds gain; sheep treated with lime and sulphur, 11½ to 14 pounds gain; sheep treated with carbolic dip, 1 to 6½ pounds gain, in one case 13½ pounds lost.

The experiment was then repeated, the lime and sulphur being used on sheep previously dipped in carbolic or tobacco dips, and vice versa. After ten days the sheep treated with lime and sulphur had gained from 2 to 3 pounds; the sheep treated with tobacco had remained stationary, or had lost from 1 to 1½ pounds; the sheep treated with carbolic dip had gained as high as 1 pound, or remained stationary, or had lost as much as 2½ pounds. At this point circumstances intervened which closed the experiments for the season.

Gillette has also made determinations of the loss of weight of sheep from dipping. Part of his results agree with those of the bureau and part differ. The chief point of difference in opinion is that Gillette considers the best conclusion can be based upon weights taken a few days after dipping, while we consider the weight at a later period as the better criterion. Gillette gives weights from November 17 to December 22, and, taking the cases where the sheep have been dipped twice, we see from his tables that the sheep treated with tobacco gained 8 pounds, the sheep treated with arsenical dip gained 8 pounds, the sheep treated with lime and sulphur, which, unfortunately for the comparison, did not receive the same fodder as the others, gained 9 pounds, while the sheep which were not dipped, in order to gvie a basis for comparison, gained 6 pounds.

Holding in mind that sheep may apparently gain or lose about three pounds per day when not dipped, it is seen from the experiments by Gillette, in Colorado, and by this bureau, in the District of Columbia, that the oft-repeated claim that lime and sulphur dips give a greater setback than other dips is erroneous. In both the western and eastern experiments the sheep treated with lime and sulphur averaged the greatest gain, the sheep treated with tobacco the second highest gain, while the sheep treated with carbolic dip showed the lowest gain.

DIPPING PLANTS.

There are numerous kinds of dipping plants in use, the size and style varying according to the conditions which are to be met and the individual taste of the owner.

The farmer who has but a small flock can use a small, portable vat for dipping, turning a part of his barn or some shed into a catching pen; by holding the sheep a moment at the top of the incline, as the animals emerge from the vat, and allowing them to drain, he can do away with the necessity of a draining yard.

When large flocks are to be drained at stated periods it will be economy to build a more permanent plant. Such a plant should consist of (1) collecting and forcing yards, provided with a (2) drive and (3) chute, or slide, into the (4) diping vat, from which an (5) incline with cross cleats leads to the (6) draining yards.

Heating tanks or boilers are also necessary. For a small vat any portable caldron with a capacity of 30 to 100 gallons will answer, and the proper temperature may be maintained by pouring fresh hot ooze into the vat as the supply is exhausted by the dipping. In the large permanent plants the temperature can best be regulated by means of a steam pipe or hot water coil close to the floor of the tub.

Thermometers are an absolute necessity. The floating dairy thermometer will be found to be most convenient and several extra thermometers should be kept on hand to replace broken instruments. The thermometer is dropped into the vat and allowed to float for a short time, then quickly removed and the temperature determined. It is well to make paint marks at the side of the 100° and 110° points.

Building material—The yards and vat may be built of wood, concrete, cemented stone or brick, according to the individual taste of the owner and the facilities at hand.

Dimensions—The dimensions of the various parts given in the following descriptions may be varied according to the breed and the number of sheep to be dipped. Dipping liquid will be saved by making the tub much narrower on the bottom than at the top. On top, simple oblong dipping tanks vary from 1 foot 9 inches to 3 feet in breadth, 2 feet or 2 feet 6 inches forming a convenient medium. Floors vary from 6 inches to 3 feet in width, 9 inches forming a good working medium. Depth varies from 3 feet to 5 feet 6 inches, 4 feet to 5 feet forming a convenient medium. If calves are to be dipped in the same vat it will be best to make the tub 5 feet or 5 feet 6 inches deep.

In sinking the tub in the ground it is always well to have the top of the tub 9 inches above the ground line. It is also well to sink one end (where the sheep are thrown in) slightly lower than the other end, as this will make it easier to empty and clean the vat.

Crutches or forks—In using large vats, crutches or dipping forks are necessary, and even with small vats are useful. Crutches should be 5 or 6 feet long. The handle should be strong (rake handles are a little too light). One end is provided with an iron ferrule, into which the bent iron is inserted. The iron should be one-half inch round or three quarters inch half round.

Gauges—The capacity of tubs should be plainly marked on the side every 3 or 6 inches in order to correctly measure the amount of liquid.

SMALL PORTABLE VATS FOR SMALL FLOCKS.

If no regular dipping vat is at hand a good-sized tub may be used. Dipping in this manner is slow and tedious, but may be resorted to in case of necessity, as, for instance, when a few sheep are bought from another flock which is not known to be absolutely free from scab. If care is taken to dip thoroughly the dipping may be done as effectually in such tub as it could be done in a large vat. Recourse to ordinary tubs is not advised, however, when it is possible to use regular dipping vats. Lambs may, in case of necessity, be dipped in troughs.

A small portable vat is suitable for use in dipping small flocks. When not in use this vat may be conveniently stored away. An advantage connected with this vat is that it may be conveniently drawn from place to place as desired. The dimensions may be varied, according to individual taste by making the vat longer, broader or deeper. A convenient size will be 9 feet by 2½ feet broad at the top, 9 inches broad at the bottom, and 3½ to 5 feet deep; the floor measures 9 inches broad by 4 feet long; from 1 foot above one end of the floor a slant with cross cleats rises to the top and end of the vat. The sheep are dropped in by hand, one at a time, at the deep end, and after being held in the dip for two minutes are allowed to leave the vat at the slanting end. They are held a moment on the slant to allow them to drain off, thus economizing in dip. A gate may be placed at the deeper part of the slant if desired, in order to save labor. This gate should swing toward the exit of the vat. Such a tank may be of 1½-inch pine boards, with tongue and groove, and should be well pitched or painted.

This plan of vat may be easily modified, if desired, so as to have a small dripping platform attached. In this modified plan an inclined platform is added to the vat and removable skeleton box is made to fit over it. While one sheep is being dipped another sheep is allowed to ascend the incline into the small dripping pen. When the sheep is sufficiently drained the gate is opened, it leaves the pen, the gate is closed, the sheep in the vat enters the pen and another sheep is placed in the vat.

FEDERAL LAWS AND REGULATIONS RELATIVE TO SHEEP SCAB.

As the scab of the sheep is unquestionably a contagious disease, it is unlawful to ship sheep so affected from any state, territory or the District of Columbia. The penalties for such shipment of diseased sheep are heavy, as will be seen from an examination of sections 6 and 7 of the act approved May 29, 1884, which are as follows:

"SEC. 6. That no railroad company within the United States, or the owners or masters of any steam or sailing or other vessel or boat, shall receive for transportation or transport, from one state or territory to another, or from any state into the District of Columbia, or from the District of Columbia into any state, any live stock affected with any contagious, infectious, or communicable disease, and especially the disease known as pleuro-pneumonia; nor shall any person, company, or corporation deliver for such transportation to any railroad company, or master or owner of any boat or vessel, any live stock, knowing them to be affected with any contagious, infectious, or communicable disease; nor shall any person, company, or corporation drive on foot or transport in private conveyance from one state or territory to another, or from any state into the District of Columbia, or from the District into any state, any live stock, knowing them to be affected with any contagious, infectious, or communicable disease, and especially the disease known as pleuro-pneumonia; provided, that the so-called splenetic or Texas fever shall not be considered a contagious, infectious, or communicable disease within the meaning of sections four, five, six, and seven of this act, as to cattle being transported by rail to market for slaughter, when the same are unloaded only to be fed and watered in lots on the way thereto.

"SEC. 7. That it shall be the duty of the Commissioner of Agriculture to notify, in writing, the proper officials or agents of any railroad, steamboat, or other transportation company doing business in or through any infected locality, and by publication in such newspapers as he may select, of the existence of said contagion; and any person or persons operating any such railroad, or master or owner of any boat or vessel, or owner or custodian of or person having control over such cattle or other live stock within such infected district, who shall knowingly violate the provisions of section six of this act, shall be guilty of a misdemeanor, and, upon conviction, shall be punished by a fine of not less than one hundred dollars nor more than five thousand dollars, or by imprisonment for not more than one year, or by both such fine and imprisonment."

The provisions of this statute are very specific and clear, and there can be no possible doubt of their application to the disease under consideration. Congress has, nevertheless, gone still further by way of emphasizing this application, and has particularly directed the attention of the Department of Agriculture, to a few important diseases, including sheep scab, by the following clause, which has been repeated in the appropriation act for a number of years:

"* * * and the Secretary of Agriculture is hereby authorized to use any part of this sum he may deem necessary or expedient, and in such manner as he may think best, in the collection of information concerning live stock, dairy, and other animal products, and to prevent the spread of pleuro-pneumonia, tuberculosis, sheep scab, and other diseases of animals, and for this purpose to employ as many persons as he may deem necessary.

"Act of February 2, 1903."

Acting in accordance with this legislation, the following orders have been made and promulgated by the Secretary of Agriculture, and are now in force:

(B. A. I. ORDER NO. 108.)

REGULATIONS TO PREVENT THE SPREAD OF SHEEP SCAB.

UNITED STATES DEPARTMENT OF AGRICULTURE,
OFFICE OF THE SECRETARY,
WASHINGTON, D. C., April 3, 1903.

To the Managers and Agents of Railroad and Transportation Companies of the United States, Stockmen, and Others:

"In furtherance of the regulations for suppression and extirpation of contagious and infectious diseases among domestic animals in the United States, dated March 10, 1903, (B. A. I. Order 106), notice is hereby given that a contagious disease known as sacbies, or sheep scab, exists among sheep in the United States, and in order to prevent the dissemination of said disease and to aid in its eradication, the following regulations are established and observance thereof required:

"1. It is required of everyone intending to ship or to trail sheep to ascertain that the sheep are not affected with scabies and have not been exposed to the contagion thereof before offering them for transportation or before crossing state or territorial boundaries. Transportation companies are required to provide cleaned and disinfected cars or other vehicles for the reception of sheep, and to refuse for shipment sheep whose freedom from disease and from exposure to contagion is in doubt. Sheep that are not affected with scabies and that have not been exposed to the contagion may be shipped or trailed without restriction, unless they are in a locality where inspection and certification are required before their removal therefrom.

"2. Sheep that are affected with scabies, or that have been exposed to the contagion of scabies, either through contact with infected flocks or infected premises, pens, or cars, shall not be shipped or driven from one state or territory or the District of Columbia into another state or territory or the District of Columbia, or into public stock yards or feeding stations, until they have been dipped in a mixture approved by this department, except as provided in Rule 4.

"3. Sheep that are affected with the disease may be shipped for immediate slaughter after one dipping, but if they are intended for feeding or stocking purposes they shall be held for a second dipping ten days after the first one. All of the sheep in a certain flock or shipment in which the disease is present shall be considered as affected with the disease.

"4. Sheep that are not affected with the disease, but which have been exposed to the contagion, may be shipped for feeding or stocking purposes after one dipping, but may be shipped for immediate slaughter without dipping.

"5. When affected sheep are shipped for slaughter after one dipping, and when exposed sheep are shipped for slaughter without dipping, the cars conveying them shall be marked on each side with a card bearing the words 'Scabby Sheep," and said cards shall not be removed until the cars have been cleaned and disinfected.

"6. The dips now approved are:

"(a) The tobacco-and-sulphur dip, made with sufficient extract of tobacco or nicotine solution to give a mixture containing not less than five one-hundredths of 1 per cent of nicotine and 2 per cent of flowers of sulphur.

"(b) The lime-and-sulphur dip, made with 8 pounds of unslaked lime and 24 pounds of flowers of sulphur to 100 gallons of water. The lime and sulphur should be boiled together for not less than two hours, and all sediment allowed to subside before the liquid is placed in the dipping vat.

"Either one of these dips may be used.

"7. The dipping must be done carefully and the sheep handled as humanely as possible. The department, however, assumes no responsibility for loss or damage resulting from the dipping, and those who wish to avoid any risks that may be incident to dipping at the stockyards, as well as to avoid liability to prosecution, should see that their sheep are free from disease before shipping them to market.

"8. The sheep must be kept in the dip between two and three minutes and their heads be submerged at least once, though for but an instant at a time, and assistance must be rendered immediately if they appear to be strangling. The dip must be maintained at a temperature between 100° F. and 105° F. while the sheep are in it. It must be changed as soon as it becomes filthy, regardless of the number of sheep dipped in it, and in no case shall it be used when more than one week old. In emptying the dipping vat the entire contents must be removed, including all sediment and droppings or other foreign matter.

"9. Suitable dripping platforms and drying pens shall be provided. In cold weather sheep shall not be dipped unless they can be kept in a warm pen until dry. Sheep shall not be loaded until they have become dry.

"10. Where large numbers of sheep in a district are ready for transportation, inspectors of the Bureau of Animal Industry will make inspections and give certificates for sheep found free from disease and not to have been exposed to the contagion and for sheep dipped under their supervision. Certificates will also be given at feeding stations and stock yards where inspectors may be stationed.

"11. Sheep dipped under a certificate are not guaranteed uninterrupted transit; for in the event of the development of scabies, or exposure to it en route, they shall be dipped before proceeding to their destination, and the cars or other vehicles, and the chutes, alleys, and pens that may have been occupied shall be cleaned and disinfected.

"12. Public stock yards shall be considered as infected and the sheep yarded therein as having been exposed to the disaese, and no sheep may be shipped out without being dipped, with the exception noted in Rule 4. Where, however, a part of the stock yards is set apart for the reception of uninfected shipments of sheep and is kept free from disease, sheep may be shipped from such part without dipping. If by chance affected sheep are introduced into such reserved part, they shall be immediately removed therefrom and the chutes, alleys, and pens used by them thoroughly cleaned and disinfected. No sheep may be shipped for feeding or stocking from any stock yards where an inspector of the Bureau of Animal Industry is stationed without a certificate of inspection or of dipping given by him.

"13. Cars and other vehicles, yards, pens, sheds, chutes, etc., that have contained affected or exposed sheep shall be cleaned and disinfected immediately after the sheep are removed therefrom.

"14. Cleaning and disinfection shall be done by first removing all litter and manure and then saturating the interior surfaces of the cars and the woodwork, flooring, and ground of the chutes, alleys, and pens with a 5 per cent solution of crude carbolic acid in water, with sufficient lime to show where it has been applied.

"15. Violation of this order is punishable by a fine of not less than $100 nor more than $1,000, or by imprisonment not exceeding one year, or by both fine and imprisonment.

"16. B. A. I. Orders No. 5 and No. 38 are hereby revoked.

"JAMES WILSON,
Secretary."

Instructions have also been issued to inspectors to rigidly enforce the meat-inspection law and regulations relating to scab in sheep. Sheep in an advanced stage of scab are feverish and unfit for food, and their carcasses will be condemned. Shippers who forward animals for slaughter in this condition will be likely to lose heavily upon them, as they will be subject to quarantine and condemnation. This is an additional and important reason for curing affected animals before they leave the feeding place.

The laws and regulations which have been adopted for the control of sheep scab are necessary to prevent the spread of the disease and the losses which result from it. If disregarded, they may prove inconvenient and expensive to shippers whose flocks are affected. The information given in this bulletin will aid in an intelligent and helpful compliance with these regulations and in avoiding delays and prosecutions which might otherwise occur.

A NEW SHEEP FARMING IN THE CORNBELT.

Joseph E. Wing, in Breeders' Gazette.

Once a party of us were making a trail up a difficult mountain. We went up a very narrow and steep canyon which after a time degenerated into a mere cleft in the mountainside and was one succession of waterfalls and impossible, steep, slippery, mossy banks and ledges. We had come down this canyon on horseback, on the sure-footed mountain horses and had taken it as a matter of course that we could make a trail up it, so we worked and made it from the bottom as we went. And at last we ran it into the ground! Literally, we were "up against it." We could see no outlet from the pocket into which we were landed, for ahead of us was a waterfall and on each side awfully steep slippery banks with only enough earth on them to hold grass roots and under that shaly rock, the worst for trail building. And we went to bed, as cowboys will, without trying to figure it out; we had worked till dark and let the morrow care for itself. And that night I dreamed that I went up to the mist of the little waterfall and there found a great cavernous place where the rocks overhung, that I turned at the cavern and going out to my left found a pass over the ledges and so to the easier slopes beyond. And in the morning I went to see if my dream was true, and, lo! it was even so. With ease and laughter and gay spirits we made the trail above and since then many thousands of cattle have pased under the shadow of that jutting cliff and out through the cavern to the pineclad hillside.

Last night I lay awake, out on our upper porch, my little boy in my arms, and the first winter's storm raged in the oak trees and I felt real regret that my hair is thinner than when I ranched it, and after a time it flashed over me:

"Why, you have the problem of keeping sheep in health and profit on eastern farms, on farms in this very cornbelt solved. You have by thought and experiment settled point after point. There remains now only the connecting of the links, and you can, if you can get men to believe and do the work, lead them to keep sheep successfully in goodly numbers in these regions where for a decade they have thought that they could not keep sheep at all and have 'proved it. Now can not you write this thing up convincingly enough so that some men will give a demonstration that will convince the others?"

Here some doubting Thomas may ask: "Why don't you do it yourself, Joe?" The fact is, we may. If we do not, right off, it will be because of these reasons. We keep pure-bred sheep. We have in a flock of about 60 ewes invested quite a little money. To stock a farm with pure-bred ewes costing around $30 each would be expensive. To stock in part with market ewes has been against our policy, since we desired to have only the few select ones, and no chance of mistaking the ancestry of any lamb. We have no pastures aside from two small woods pastures, one of 14 acres and one of 18 acres, and a horse pasture of about 30 acres. And besides all these reasons there is a psychological one: my brother Charlie is not yet convinced that I am right, and he manages the ewes. You know prophets always have more or less trouble at home, yet I feel it in my bones that I am right, and I have so very much evidence. I have gathered this evidence, some of it with pains and even tears, for many years. I have gathered some of it from experiences of others in other lands. I have done one thing after another, all the things that make the plan I am about to suggest, but not all of them in connection. The trail is all made, it only needs the ends of the zigzags tied together. Who has the faith, the energy, the patience to tie them together, to make a demonstration of how easily and cheaply and safely and profitably sheep may be kept in Ohio, in Ilinois, in Indiana, in Iowa? Any one can keep sheep in northern Michigan, in northern Minnesota, in the Dakotas (though there is trouble coming there, and already come in some places), in the whole region of the arid West. But who can keep sheep on the rich lands of the cornbelt? Who has done it, with large numbers, and without troubles dire and dreadful? I can tell how to do that. Here goes.

In the beginning was the sheep, happy and healthy and suckling golden lambs, bearing golden fleeces. That was very long ago. Later came the stomach worm, and the two mixed. The result was sorrow for sheep and shepherd. That stomach worm when he came put forever behind us the days of the golden era. No more could we keep sheep in a care-free, happy-go-lucky way. Thereafter to keep sheep was a matter of care and trouble and toil, and then sometimes disaster. We did not know the worm, nor how early it was, nor how late. We took it as a mysterious dispensation of Providence when he came and let the lambs sicken and die, or else dosed them half to death and lost all pleasure and profit from them.

Now we know. We know whence comes the trouble. We know how parasites get from the mother sheep to the lambs. We know that it takes a certain length of time for the germs when dropped upon the grass to develop enough to get to the lambs. That time may roughly be set as ten days. We know that the lambs are born free from parasites. And we know how to free the mothers pretty well from parasites before the lambs are born for that matter. And I have by demonstration on our farm shown the great tonic that comes to sheep from frequent change of pastures. All these things are here; some are new, some are old. Here in a nutshell is the science of successful sheep farming in the cornbelt. Select as healthy ewes as you can; they will all be infected more or less, very likely. Treat every ewe before she lambs so as to destroy as many parasites in her as you can. Dr. Ransom is inclined to believe that coal tar creosote, which is much the same thing as the common coaltar dips, diluted with 100 parts of water, is the best thing to give to mature sheep. I will not here tell how to treat the ewes; if you are sufficiently interested to go into this thing write the zoological department of the bureau of animal husbandry, at Washington, for advice. They are actively experimenting and studying this very thing right now, but treat the ewes any way. It will pay well. I have gathered evidence that ewes treated made their lambs weigh just double what untreated ewes could make theirs. To lessen the pollution of the fields is good. To increase the digestive powers of the ewes so that they will give more milk is good. This treatment will not cost five cents a head, once you set about it. If you go no farther you have done well, but this is only the beginning.

The next step will cost some money. Divide up your pastures. Make of them about twelve divisions, we can not tell exactly yet how many are needed. It is well if these pastures have had no sheep on them for over a year. Let the lambs come when you will, though early lambs are more profitable for mutton than later ones. Let them come in February and March, but if you desire postpone the time till April or May. Keep the ewes and lambs to the yard, feeding well till grass is really good. If you like you may give a run to a rye field; that is good to stimulate milk flow, but do not depend upon the rye, and keep off your grass till it gets sun in it. Then turn all the ewes and lambs to the pastures—all in one lot, together. Do not scatter them all around, a few in each pasture; that has been your custom in the past. Of course, you may have some dry ewes that you want to keep back, but keep them clear out of your scheme; have a lot devoted to them, or else keep them in the barn and feed them. Do not scatter them around in your pastures. All together, I say, and let them at the grass. How they will devour it! In the next field, just across the fence, is where next they will go. Make a creep and let the lambs run in there at the outset. "Aha," I hear Dan Taylor say, "that's nothing but English hurdling!" Much the same, brother, granted, only I am using our native pastures and permanent fences.

We will hold the flock for a week, or less time if they eat the grass down too close. There is almost no danger of infection in a week. The germs may have fallen to the earth, but they have not developed. Then the lambs have not eaten much with the ewes any way. They have soon learned to run ahead to the other pasture, for stolen apples are sweet. And in that pasture we will have troughs with a little corn or oats or what not to push the lambs a little faster. In a week or less, then, the whole flock moves up one place, ewes go where the lambs were, the lambs go ahead again. One can not make a hard and fast rule here, for it all depends on how many sheep there are and how much grass, only do not keep them in the lot too long. A week is a safe proposition, it would seem from the light of modern science. It is good for the grass to be eaten close. The ewes will not suffer from doing this. Give them a bite of bran if they are milking hard, or of oats.

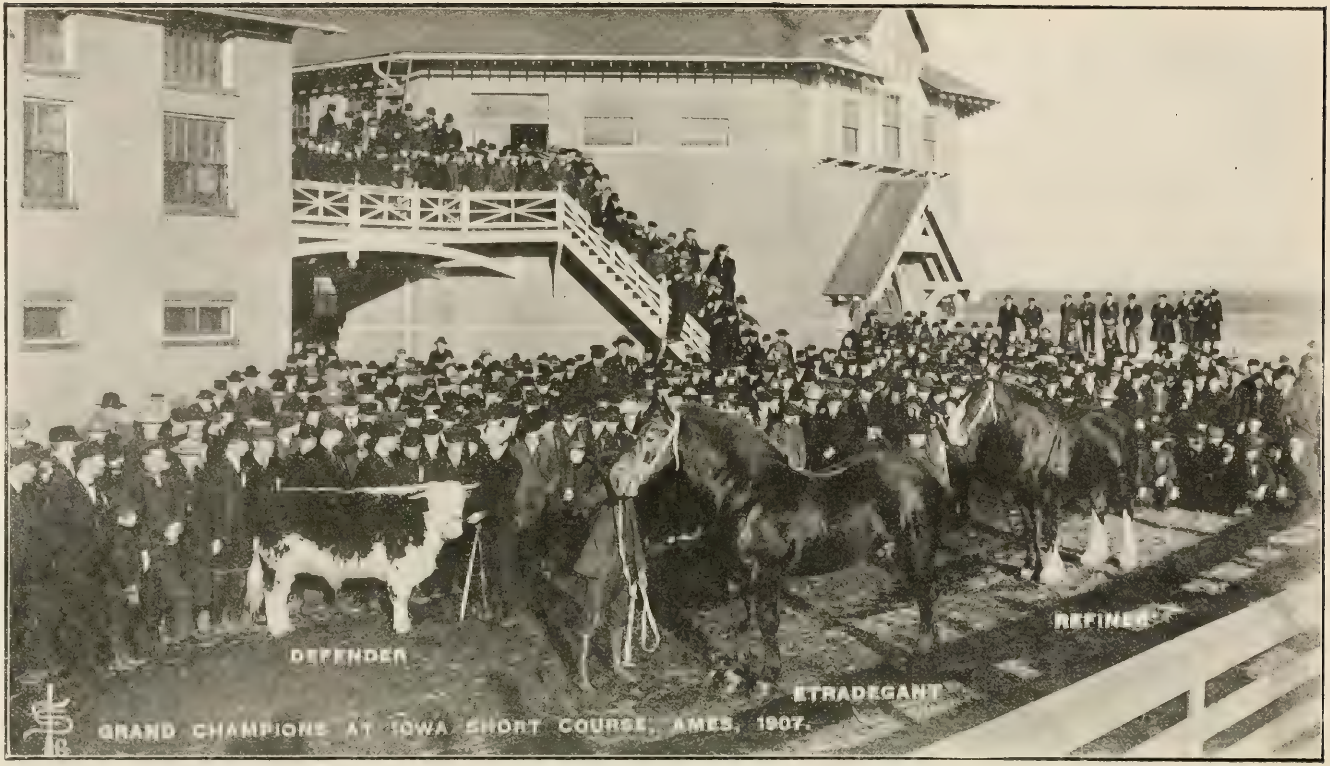
Then in another week turn them forward once more and again in a third week, and so on right along till the lambs are all too fat to keep at home and are sold off. Twelve pastures will run the flock through June, July and part of August; sixteen lots will run them till danger of infection is over. And all the lambs will weigh 125 pounds before that time and sell for 6 or 7 cents per pound. You can not afford to keep them longer and you will have the best looking, most even flock you ever saw. And the ewes will feel fine as crickets.

The difficulties? Two—water and shade. Water is easy. You can haul it as they do in England in a round or square galvanized iron tank and water in a trough. It does not take much water. Shade you will have to manage for yourself. Meantime let me tell you that in the San Joaquin Valley of California I saw some of the fattest sheep that I ever saw, part of them Shropshires, that had no shade except their ears! And that is a hot climate. We have too much shade and too little safe, healthful grass in our land. There may be temporary sheds or movable sheds or canvas shades, or no shade at all, or the sheep may come to the barn basement for shade every day. Either plan will work I know. How many ewes in this manner? I am not afraid to try 400. That is about as many as I would care to put together on a farm in the cornbelt. It may be that twice that number would do as well. But try it on that 100 that you now have.

And the profit? Better than cattle, better than pigs; sheep shear more. The range can not supply us any longer, it seems, with mutton. The farms can not, under any other tried system. What to do with the grass after the ewes have eaten it down and left it? In the fall let the flock, without their lambs now, range over it again, or let colts or calves follow. It is nonsense to say ewes poison grass. This past summer I purposely had ewes gnaw to the ground some small horse lots. They ate rank grass that horses had left. They were forced to it. After the ewes were taken away the grass sprang up and the horses ate it better than ever.

What kinds of grass? What you have. We may learn better sorts, but begin first to use rightly what you have. Brome-grass, clover, alfalfa, all are good in their place, and brome-grass may prove the best pasture grass for us, but at present learn to use your bluegrass safely. And what of this grass the second year? Dr. Ransom tells us that stomach-worm germs will (some of them) live over winter. His laboratory work shows that. However, not very many are being scattered from these treated ewes. Then I have some striking evidence that here in central Ohio these germs do not always live over. One year on a rich bluegrass pasture nearly all of the lambs died. I never saw a worse infestation, nor did we treat any of them or their mothers. We did not know how. Next year we dared not use this pasture at all. It was a rented field. A neighbor rented it and used it, lambed on it, kept the ewes and lambs all summer on it and had no evidence of damage from worms. So I believe we are safe to go ahead on these lines, to diminish as much as possible the number of worms laying eggs, to prevent by frequent change the re-entrance of worms into the ewes, to prevent any infection at all of the lambs. I simply know it will work and the result will be joy to the shepherd, health and beauty and profit to the flock.

Now who will try this and try it intelligently and thoroughly? I call for volunteers.


DEFENDER
TRADEGANT
REFINER

GRAND CHAMPIONS AT IOWA SHORT COURSE, AMES, 1907.

The Two Weeks' Annual Short Course At The Iowa State College.

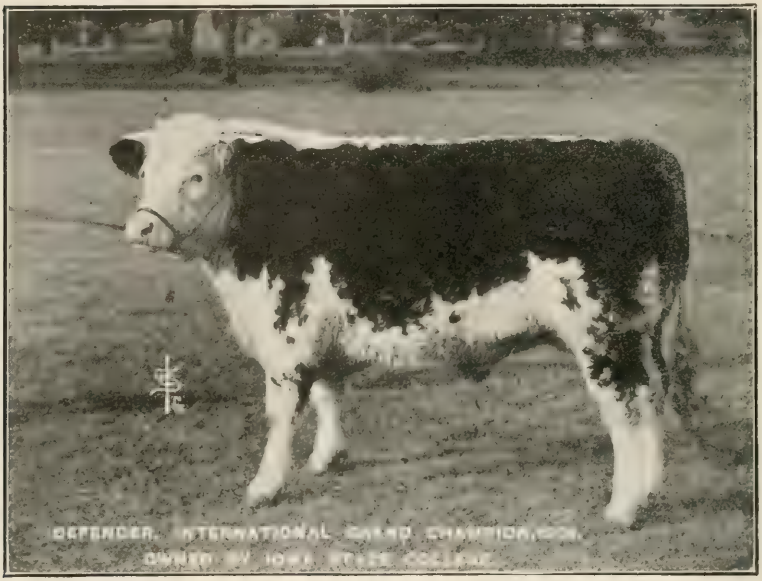
The annual short course at Ames was held December 31st to January 12, 1907, with the 1,000 mark surpassed in number attending. This enrollment is the largest that has been ever recorded and goes to show that the farmers of the state are fully appreciative of the work being done by the Iowa State College. The attendance this year was remarkable not only for the large number present but also for the intense interest displayed in every class and at every session of the twelve days given over to the promotion of a greater agricultural knowledge.

Not only was Iowa represented, but men came from all over the country to take this work. Connecticut, Georgia, Montana, Texas, Pennsylvania, Ohio and California represented the range of states. Some came even from England, Canada, Mexico and Argentine Republic. The state wide interest in the short course movement was well illustrated by the presence of delegates from many corn clubs and county farmers' institutes. These organizations paid the expenses of their delegates to attend the college. The school met this movement in a frank way by remitting the tuition dues of such delegates. All the institutes did not avail themselves of these opportunities due to the lateness of getting out the information concerning the college's unexpected liberality and next year even a larger number of the delegates are expected.

Since their inception six years ago the stock and grain judging courses have been in high favor with the farmers of the state, and this year, as was to be expected, they lead in numbers of students enrolled, about three-fourths of the total number present taking them. The three other courses—dairying, domestic science and horticulture—inaugurated more recently, had a goodly following, ranking in the order named in popularity. About 100 took dairying, thirty-five young men from the best nurseries and gardens of the state came to learn of the things horticultural, and in the domestic science there were about fifty young ladies studying how to make the home happier and better.

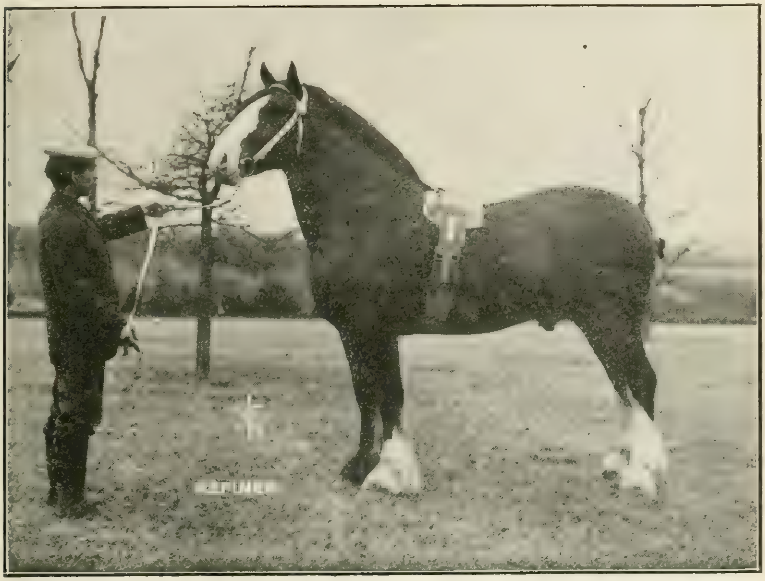
One of the greatest collections of live stock ever assembled in an agricultural school for the use of students had been gathered together by Dean Chas. F. Curtiss for this occasion. Both breeding and fat sheep were handled. Leicester's, Shropshires, Southdowns and Oxfords were viewed from the mutton standpoint, and a few Lincolns and Rambouillets were present to show the present day requirements of the wool market. Some Merinos were brought before the classes to show the extreme fine wooled type. It is a fact that today Iowa is not much of a sheep state, but there is a good future for this constantly growing industry and these classes brought before the students were heartily welcomed for this reason. Prof. Dinsmore was the principal instructor in sheep and handled his classes well.

Some excellent fat barrows were on exhibition and were used in score-card practice. These were good exemplars of the various breeds in this State and showed that there were vast possibilities for hogs in Iowa.


DEFENDER, INTERNATIONAL GRAND CHAMPION,
OWNED BY IOWA STATE COLLEGE.

In the horse line, twelve animals from the stables of McLaughlin Bros. at Columbus, Ohio, including six Percherons and six French coachers, were the main attraction. In this string were found the French coach stallions, Denoyes and Etratat, two outstanding horses of great style and beauty, both of them being winners at the Ohio State Fair this year. The Percherons were the kind of stock usually found in sale stables and for this reason were especially valuable as class room models. There were, however, two exceptional show horses of the draft type. These were Etradegant, the grand champion sweepstakes Percheron at the recent International, and now owned by the college and used for class room and stud purposes, and the Clydesdale Champion Refiner, who is an ideal leader of his breed. Refiner was the purple ribbon horse in his class at Glasgow, Scotland, and at the leading Canadian fairs. Refiner is a son of Baron's Pride, perhaps the greatest Clydesdale sire the world has ever known. These and many of the roadster and saddle types were used and the students were thoroughly drilled into the use of the score-card. Profs. Kennedy and McLean were in charge of the horse and cattle work.

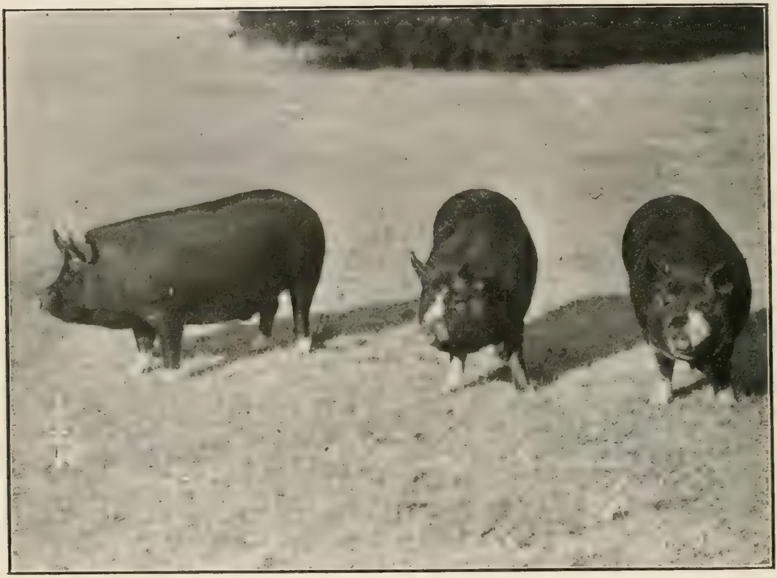
Good representatives of the breeds of cattle were present for short course use. Peerless Defender, the grand champion steer of the International, and now owned by the college, was the leader in this circle. The Lantz calf, Blue Rock, and the feeders in the college lots represented the market end. Breeding cattle were headed by Bright Sultan, a son of the great bull Whitehall Sultan, that made such a record in the 1905 show circuit, and the college herd bull, College Reformer. Donahue Bros. of Holbrook, Iowa, sent seven of their famous Angus herd, including two herd bulls, Glenfoyle Thickset 2nd and Morning Star 2nd, and their champion two-year-old cow, Black Martha. This was a strong collection for the students to have before them as ideals of the highest conceptions of the show yard. While in previous years judging dairy cattle has been done to some extent, never was it so featured as this year. Some excellent Jersey cows from the herd of Hon. J. J. Richardson of Davenport, Iowa, were used. W. B. Barney of Hampton, Iowa, loaned his Jewel of Home Farm, the world's champion Holstein bull. Under the direction of Prof. H. G. Van Pelt, superintendent of the dairy farm, dairy form and milk production were thoroughly studied.



A Grand Champion Clydesdale, used at Iowa State College Short Course, 1907

One of the most popular innovations of the whole short course were the lectures of Dr. J. H. McNeil, dean of the college veterinary department. He spoke on the diseases peculiar to and characteristic of each class of live stock that happened to be before the students, treating unsoundness and physiology in detail. Another interesting feature was the demonstrations of John Gosling, the noted Kansas City butcher, on the different cuts and their values of the slaughtered carcasses of some of the animals which had appeared before the various classes. The earnestness that John Gosling took in his own work and the sincerity of his fatherly ways won him well-merited favorable applause.

The corn judging and lectures on the different methods of handling this cereal successfully were full of interest. Truly in Iowa, corn is king. There were over 300 exhibitors showing at least 1,000 ears of corn. Prof. P. G. Holden was assisted by A. D. Shamel of the U. S. Department of Agriculture in awarding the ribbons for the premiums of the Iowa Corn Growers' Association. At the auction sale of the first and second prize winning exhibits of corn the single ear of Reid's Yellow Dent, grown and shown by D. L. Pascal of DeWitt, and the ten ears grown and belonging to Bennet Bros. of Ames, were pronounced by Prof. Holden and Mr. Shamel the best two exhibits ever raised in the United States. The single ear brought the phenomenal price of $150 at the auction, being bought by its grower, Mr. Pascal, at this price. This is a world's record, the highest priced ear previous to this selling for $11.00. The Bennett ten ears of the same variety were bought for $31.00 by their original owners, who presented them to the college for use as models. It is interesting to note that Mr. Pascal won the Cook trophy in 1904 and supplied Asa Turner with the seed corn that produced the second best ear in that year in the same contest.



Champion Pen of Berkshire Barrows at 1906 International. Owned by Iowa State College. Used in class room work during annual Short Course.

Prof. P. G. Holden and M. L. Bowman were in charge of the corn and field crops work, the former with the beginners and the latter with the more advanced men. Iowa has had a banner year with her corn crop during the past season. Better seed corn, more earnest men to plant it and an especially bountiful nature have all worked together toward this end. Outside of the regular exhibits of corn each member of the Corn Growers' Association brought in a dozen or so samples of prize corn to contest for the premiums offered by the Iowa Corn Growers' Association. There was also a good selection of small grains from the Chicago Board of Trade for use by the students as models in their score-card practice.

Scene, Iowa State Fair, 1906.

The Iowa Corn Growers' Association held its annual meeting during the short course. Something over three hundred entries were made for the prizes offered by this association. The exhibits were larger in number than ever before and their quality has never been excelled. The grand championship in the "specials" offered by this association is the Whiting trophy. Another trophy offered for the first time was a Montgomery painting valued at $200 donated by Mr. Alee of this association. Including the value of the trophies the total amount of money in prizes offered this year at the short course was nearly $1,200. (See list of awards later.).

This association is composed of loyal, enthusiastic men. The corn grower is fast reaching out for his rightful place as a scientific farmer and breeder. The rivalry of corn clubs and between districts is bound to result in good. Year after year these men come to Ames, renew their devotion to the ideals of Prof. Holden, exchange experiences and barter for each other's choice and prized samples. In many cases each has his experiment plot where are tried out samples of the different varieties. At the annual election of officers Asa Turner of Farrar was unanimously re-elected to the presidency and Prof. M. L. Bowman of the farm crops department of the college was chosen secretary.

The creamerymen's course under Prof. G. L. McKay was as popular as ever. The main attraction this year was the presence for two days of ex-Governor Hoard of Wisconsin, editor of Hoard's Dairyman. Governor Hoard is a remarkably strong writer in the promotion of up-to-date dairy methods. State Dairy and Food Commissioner H. R. Wright and his two assistants, Messrs. Johnson and Odell, were present most of the time helping in the instructional work. The dedication of the new dairy building took place at this time. The board of trustees, Prof. C. F. Curtiss and President A. B. Storms, took part in this ceremony, which was a formal turning over of the building to Prof. McKay. A course in farm dairying given this year for the second time was also well patronized.

Grand Champion Percheron at 1906 International. Used for class room and stud purposes at Iowa State College.

The young ladies in the domestic science course took regular work under the directions of Miss Georgetta Witter and her able assistant, Miss Mary Rausch. Yet this department is not appreciated as much as it should be. Home-keeping and household management are equally important to the welfare of the farm home as is the raising of grains and the economical management of stock.

Lectures on home sanitation, bacteriology, food chemistry, house decoration and home nursing were all dealt with thoroughly.

Short course work in horticulture was offered for the first time. A lot of instruction was crowded into a period of two weeks. Orchard management, the general principles of gardening, and lectures on the various garden crops occupied the time of these men. Prof. S. A. Beach was in charge of this department and won much favor with his students.

An excellent series of lectures were given in the college auditorium by men known all over the country as leaders in their specialties. In this way thoughts were put before the students that they could not obtain any other way, and many of them thought these meetings the best part of the short course. Among the speakers were Dr. Steiner of Grinnell, who talked on 'Russian Conditions;" State Dairy and Food Commissioner H. R. Wright, who gave an informal talk on "Food Adulterations;" ex-Governor Hoard of Wisconsin, who spoke on "Current Dairy Problems;" Captain Merry of the Illinois Central railroad, who read a very interesting paper on "Rebates and Short Hauls;" E. M. Wentworth of the State Live Stock Association, and the different college professors, who spoke on the larger problems lying along their particular callings.

During the past years scientific agriculture has advanced wonderfully and with enduring strides. There was a time when the up-to-date farmer would not listen to instructions from the experts of the agricultural colleges. The farmers of this State have reached the point where they realize the value and the necessity of short courses in agriculture and they are fully appreciative of the efforts being made by the school at Ames to furnish the highest ideals and best results of experimental work. It is from such associations as are obtained from coming to a short course that a greater Iowa agriculture is being built.

PREMIUM AWARDS OF THE CORN GROWERS' ASSOCIATION.

CLASS A.

(Best Ten Ears, Any Variety.)

District 1—George M. Allee, Newell; Victor Felter, Washta; J. W. Eral, Pocohontas.

District 2—Anton Nelson, Goldfield; Dr. McArthur, Mason City; Miller S. Nelson, Goldfield.

District 3—Alonzo Harvey, Ossian; H. A. McCaffree, Janesville; George C. Pashby, Cedar Falls.

Sweepstakes, Northern Section—Alonzo Harvey, Ossian; George M. Allee, Newell; H. A. McCaffree, Janesville. The $200 gasoline engine was awarded to Alonzo Harvey.

District 4—John Sundberg, Whiting; Paul C. Taff, Panora; John Parkinson, Bagley.

District 5—Eddison Bennett, Ames; O. Osborn, Maxwell; S. O. Lee, Cambridge.

District 6—W. A. Radeke, Luzerne; Fred McCulloch, Hartwick; Neal Bros., Mount Vernon.

Sweepstakes, Central Section—Eddison Bennett, Ames; O. Osborn, Maxwell; John Sundberg, Whiting. The International Harvester Co. gasoline engine, valued at $200, was awarded to Eddison Bennett, Ames.

District 7—Ray Pierson, Silver City; H. Hilton, Malvern; Harry Morley, Gravity.

District 8—Homer Dye, Oskaloosa; C. C. Roe, Oskaloosa; E. E. Morgan, Carlisle.

District 9—Charles Reubsam, Ainsworth; J. C. Frame, Salem; Arthur Williams, Ottumwa.

Sweepstakes, Southern Section—Homer Dye, Oskaloosa; C. C. Roe, Oskaloosa; Charles Reubsam, Ainsworth. Homer Dye was awarded the Success Manure Spreader.

Grand Champion Sweepstakes—The Whiting trophy, Eddison Bennett, Ames.

CLASS B.

(*Best ear, any variety.*)

District 1—W. W. Bruner, Rolfe; Victor Felter, Washta; J. W. Eral, Pocohontas.

District 2—Miller S. Nelson, Goldfield; Anton S. Nelson, Goldfield; France Warner, Goldfield.

District 3—George C. Pashby, Cedar Falls; C. E. Buckman, Castalia; Henry George, West Union.

Sweepstakes, Northern Section—Miller S. Nelson, Goldfield; George C. Pashby, Cedar Falls; C. E. Buckman, Castalia.

District 4—Harry Dooley, Casey; John Ginnegan, Monteith; Grant Chapman, Bagley.

District 5—H. L. M. Bruner, Toledo; S. C. Hughes, Newton; O. Osborn, Maxwell.

District 6—D. L. Pascal, DeWitt; L. C. Hutcheson, West Branch; Frank Wickham, Mount Vernon.

Sweepstakes, Central Section—D. L. Pascal, DeWitt; H. L. M. Bruner, Toledo; S. C. Hughes, Newton.

District 7—H. Hilton, Malvern; J. E. Turner, Adair; E. D. Roberts, Red Oak.

District 8—Homer Dye, Oskaloosa; Floyde Branson, Oskaloosa; F. S. Bone, Grand River.

District 9—Charles Reubsam, Ainsworth; W. A. Hook, Packwood; Floyde Maxwell, Crawfordsville.

Sweepstakes, Southern Section—H. Hilton, Malvern; Homer Dye, Oskaloosa; Charles Reubsam, Ainsworth.

Grand Champion Sweepstakes—The Alle Trophy and De Laval Cream Separator, D. L. Pascal.

Class in Corn Study. Short Course, Iowa State College, 1907.

CLASS C.

(Club exhibit of 50 ears.)

District 1—Cherokee Corn Club, Quimby.

District 2—Cerro Gordo Farmers' Institute Corn Club, Mason City.

District 3—Winneshiek County Corn Club, Janesville.

Sweepstakes, Northern Section—Winneshiek County Corn Club, Farmers' Corn Club, Janesville.

District 4—Guthrie County Corn club, Bagley; Whiting Corn Association, Whiting.

District 5—Randall Corn Club, Randall; Toledo Corn Club, Toledo.

District 5—Randall Corn club, Randall; Toledo Corn club, Toledo.

District 6—Linn and Franklin Township Corn Club (Neal Bros.), Mount Vernon; Luzerne Farmers' Club, Luzerne.

Sweepstakes, Central Section—Linn and Franklin Township Corn Club, Guthrie County Corn Club.

Grand Champion Sweepstakes—The Wallace Farmer Trophy, Linn and Franklin Township Corn Club.

CLASS D.

(Team work in corn judging, three members.)

District 1—Washta Corn Club.

District 2—Evergreen Corn Club, Wright county; Cerro Gordo Farmers' Institute Corn Club, Cerro Gordo county.

District 3—Farmers' Corn Club, Janesville.

Sweepstakes, Northern Section—Farmers' Corn Club, Janesville.

District 4—Guthrie County Corn Club.

Sweepstakes in Central Section—Guthrie County Corn Club.

District 7—Taylor County Corn Club.

Sweepstakes in Southern Section—Taylor County Corn Club.

Grand Champion Sweepstakes—The Farmers' Tribune trophy, Farmers' Corn Club, Janesville.

CLASS E—AMATEUR.

(Ten ears, any variety.)

Northern Section—F. C. Banks, Burt; B. T. George, Janesville; B. C. Dove, Shell Rock.

Central Section—F. C. Woodrow, Newton; D. A. Marks, Ankeny; S. C. Hughes, Newton.

Southern Section—Lennus Hagglund, Essex; F. Hilton, Malvern; E. D. Roberts, Red Oak.

Grand Champion Sweepstakes—Lennus Hagglund, Essex; F. C. Woodrow, Newton.

CLASS F—MAMMOTH.

(Ten ears.)

Claude Wilson, Silver City; John Sundberg, Whiting.

Tower Special—Ray F. Bennett, Ames; H. A. McCaffree, Janesville.

American Fence Special—Neal Bros., Mount Vernon; Claude Wilson, Silver City.

Marsceilles Special—O. Osborn, Maxwell.

SPECIALS.

Alexander, Ward & Conover Special—Rawlings Bros., Castana; Neal Bros., Mount Vernon; Eddison Bennett, Ames; F. H. Klopping, Weston; H. Hilton, Malvern.

Hayes' Special (Hayes Corn Planter)—C. W. Campbell, Gravity; A. J. Doore, Greene.

Clay Robinson & Co.—H. Hilton, Malvern; Asa Turner, Farrar; Ray Pierson, Silver City; J. M. Maxwell, Crawfordsville; Lennus Hagglund, Essex.

W. E. Johnson Special—F. S. Bone, Grand River; W. P. Coon, Ames.

Lockwood Special—D. A. Marks, Ankeny; George Bennett, Ames; W. A. Hartman, Ankeny; Eddison Bennett, Ames.

ARTICLES ON IMPROVEMENT OF CORN.

"Corn Growers' Standpoint," C. V. Gregory, Burchinal; George C. Pashby, Cedar Falls; W. A. Hook, Packwood; Paul C. Taff, Panora.

"Corn Breeders' Standpoint," W. A. Hook, Packwood; Paul C. Taff, Panora; George C. Pashby, Cedar Falls.

PRIZE WINNERS IN THE HORTICULTURAL DEPARTMENT.

D. McArthur, Mason City; H. L. Felter, Washta; C. K. Greer, Monticello; Charles O. Garret, Adelphi; Charles Garrett, Mitchellville; J. M. Maxwell, Crawfordsville; J. C. Frame, Salem; A. Schwaller, Burlington; J. A. Avery, Burlington; H. J. Ridell, Albia; G. A. Ivens, Iowa Falls.

ROSENBAUM SCHOLARSHIPS.

At the recent international live stock show in Chicago Rosenbaum Live Stock Commission Company donated $1,000 to be awarded amongst the various agricultural colleges exhibiting live stock. The Iowa exhibit won $200 of this money. Dean Curtiss decided to give this money to the two highest ranking students in a corn and stock judging contest held here at the college during the short course. These scholarships are for $125 and $75 respectively. The two highest are as follows, there being thirty-three contestants from twenty-eight counties:

First—C. Chandler, Kellerton, Iowa.

Second—Elvin Quaife, Ionia, Iowa.

Journalism Department Iowa State College, Ames, Ia.

MEMORIAL.

Hon. D. B. Nims.

WHEREAS, During the year just closed our fellow member and co-worker, Mr. D. B. Nims of Emerson, Mills county, Iowa, has been called to his reward in another world, and,

WHEREAS, In his death the Iowa Corn Growers' association has suffered the loss of one of our capable, faithful, enthusiastic, splendid workers who was widely known and honored for having developed the Legal Tender variety of corn, which has proven of great value to a large section of the corn belt; therefore, be it

RESOLVED, That the Iowa Corn Growers' association, in convention assembled, do hereby acknowledge our indebtedness to him for his splendid work while among us and to convey to the bereaved family our heartfelt sympathy in their sad bereavement.

IOWA CORN GROWERS' ASSOCIATION.

(Signed.)
ASA TURNER,
President.
D. MCARTHUR,
Vice-President.
J. W. JONES,
Secretary.
L. W. FOREMAN,
Treasurer.

The agricultural interests of Iowa and the central west have lost a staunch and capable worker in the death of the late D. B. Nims, which occurred in November, 1906, at his late home near Emerson, Mills county, Iowa.

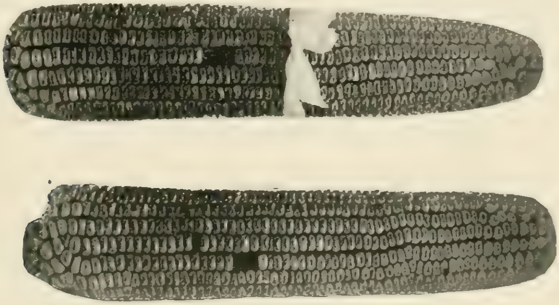
Mr. Nims has been an exhibitor at the Iowa State Fair for many years. About twenty years ago he and his brother exhibited and won premiums at the Chicago fat stock show upon a type of corn which they had been working with for more than ten years.

This new type of corn was the product of their effort to produce a kind of corn best suited to their southwestern Iowa soil and latitude.

They formed an ideal and kept that ideal constantly in their mind as their standard. Many were their disappointments, but by a faithful perseverance, prompted by an intelligent zeal and enthusiasm, they evolved an exceedingly useful and distinct variety known as the Legal Tender, now extensively planted over a large area of the surplus corn-producing states.

Mr. Nims will be long remembered by many friends throughout the west. The Legal Tender is a splendid monument commemorating the thirty years of patient care and labor in its development.

His was a useful, enthusiastic, optimistic, helpful life.



FUNCTION OF AGRICULTURAL COLLEGE.

L. B. Parshall Before Jackson County Farmers' Institute, Canton, Ia.

The executive board of the Farmers' Institute of this county have obtained for this session of the institute the services of three distinguished gentlemen, all by chance, connected with the working force of the School of Agriculture and Mechanic Arts located at Ames, Iowa. One of these gentlemen addresses us on a feature of grain raising, another on a feature of stock raising and still another on a feature of farm mechanism. The presence of these gentlemen with us on this occasion seems to the chair a justification for considering in a general way "The Function of the Agricultural School in the Modern State." But in order to state with some degree of clearness the function of the agricultural college it is perhaps better to consider first in what manner the agricultural college is related to other forms of higher education.

Higher education in modern times is following two lines. The first of these may be called classical education; the second, for lack of a better name, we shall call technical education. The classical school presumes to impart knowledge and to furnish so-called mental training. The technical school offers, as its ultimate purpose, the training of the human hand how to do things. And it may be remarked that a school for training the hand how to do things is something new in the world. Up to a point in history no farther back than the last century there was only one kind of school, the classical school.

The school for training the hand had not been evolved.

We are all aware that the state of Iowa, as such, supports distinguished schools representing each kind of learning, viz: The university at Iowa City for teaching the classics and one at Ames teaching technology and the handicrafts. Both of these institutions, each of which we believe to be among the best in its respective ways, are supported by the taxpayers of Iowa. It is assumed by the chair that the taxpayer wishes to know in as concrete a form as possible what these schools respectively stand for.

The function of the S. U. I. is widely known and gradually approved and there is no occasion to elaborate upon it.

But in respect to the function and scope of the Ames school we fear that the popular impression is not so favorable.

Be that as it may, there is room enough and occasion enough for a fuller statement touching the dignity of the work of the Ames school and the magnificent impression which it and other schools like it are putting upon our civilization.

The busy Iowa farmer has not thought out to a conclusion the relation which exists between the technical school and the white houses and red barns and other signs of material prosperity which gladden the Iowa landscape.

To define "the function of the agricultural school in the modern state" offhand is not an easy thing to do. To study the branches therein taught would be one way, but it goes without saying that it would be a hopeless task in the fifteen minutes at our disposal to enumerate the branches taught in the agricultural school and thence to deduce a conclusion as to its functions.

Instead of that it is deemed best, first, to outline a certain great economic movement which overtook our race the latter part of the eighteenth century; second, to note some of the blessings which followed in the trail of this great movement and, third, to point out that the agricultural college and in fact every technical school, is an accessory to that movement.

We shall first concern ourselves with the time limits of this movement and on this point shall venture the assertion that it was some time in the year A. D. 1769 that our civilization took on its new type and that therefore the movement is 128 years old. In many important matters and in fact, we believe, in the most important matter of all the civilization which preceded 1769, is of one type or sort and the civilization which followed the year 1769 is of another sort. We have singled out the year 1769 as the line between the new and old civilization, because in that year it was that James Watt perfected the steam engine and by virtue of what followed after, became a sort of a John the Baptist, to introduce the new movement.

It is the trophy of Jas. Watt that he is distinctly the first man since the commencement of historic time to increase and augment and multiply by any considerable ratio the producing power of the human hand. Again it can be said of Mr. Watt's service to mankind that it is like a flower which blooms perennially. Probably no one year out of the 128 since Mr. Watt's invention has rolled into eternity, which did not witness by some new application of steam an increase in the producing power of the human hand.

Having said this much concerning the time the movement began we shall now attempt before going farther to give the essential feature of the movement which has modified our civilization. That movement may be described as a continuous, sustained, serious effort of the human mind to increase the producing power of the human hand. The gist of this bloodless revolution is the added earning power which has come to humanity.

Under the old order of things the struggle by the common people to get food, clothing and shelter was so keen that no time or leisure was left for education or for ethical considerations. It is the feature of the new movement we are now considering that the power and ability to produce these necessities of life has grown to a degree in many instances passing belief.

In the earlier stages of the movement—we are contemplating the growth—producing power was mostly accomplished by mechanical devices such as the steam engine already mentioned, but later on in the movement the productiveness of labor began to be augmented by the exact sciences such as chemistry, botany and towards the last by biology and bacteriology. For instance, as illustrating what botany contributed to the movement, it could be mentioned that between 1820 and 1840 in certain parts of England the introduction of clover doubled the producing power of the agricultural effort.

Or as farther illustrating what we mean it could be mentioned that the science of chemistry in the matter of making steel by the Bessemer process multiplied by a per cent which is scarcely believable, the producing power of the human hand.

GROWTH IN PRODUCING POWER.

But perhaps a better idea of the movement could be conveyed by giving in the order of their occurrence a few of the conspicuous devices by which during the last century the productiveness of labor came to its present state and condition.

After the invention of the steam engine the next great step forward was taken A. D. 1800 by Eli Whitney of South Carolina of the United States of America. You know all about the cotton gin, but perhaps you have not all reflected, first, that nine-tenths of humanity is clad in the fiber from the cotton plant; second, that under the old order of things in the preparation of that clothing one-half the work was involved in separating the seed from the fiber; third, that in the great matter of clothing humanity Mr. Whitney multiplied by a ratio approaching (2) two the producing power of the human hand.

We shall now run by the period from A. D. 1800 to 1845, which included a number of important inventions in order to have time to treat a little more fully the balance of the century.

In the period from 1845 down to the present the power of the human hand to produce life's necessities has increased by leaps and bounds.

Wheat may be termed the first of life's necessities and may as well come first in order.

In tne decade in which your speaker was first stranded on this planet, viz: between 1840 and 1850, it was the work of one man within the limits of a proper seed time to sow ten acres of wheat and later to harvest the same. In this year oı grace, 1907, within the same limits as to proper seed time, it is the work of one man to sow and later to harvest one hundred acres.

We shall next consider for the same period the increment of potentiality in corn raising between 1840 and 1850. It was a good man who could within the proper time limits as to seed time, plant and harvest six acres of corn and meet the following conditions: First, to plow that six acres with an iron shear bolted onto a wooden frame; second, reduce the ground to a condition of tilth, using as a harrow a limb cut from a tree; third, mark it out both ways with a front (bench) "bob;" fourth, plant it by hand, counting out three kernels to the hill, 3,540 hills to the acre; fifth, go over it four times with a single shovel plow; sixth, to cultivate and hill up with a hoe each one of the 21,440 hills in the field; seventh, and finally, on the 10th of July, lay it by free of grass and weeds. Yes, it was a good man who could do that, and it was not often done.

And the man who in 1840 could meet those requirements can now, with modern tools and modern process, "lay by" in the same degree of culture and cleanliness, on the 10th day of July, a field of sixty acres. And this is annually done on thousands of Iowa farms. The ratio between the past and present productiveness of labor in the corn field, it will be noted, is also (10) ten.

These two ilustrations indicate sufficiently for the purpose of our argument the increase in the grain producing power of the American farmer. But the increment in producing power in other fields in the last century has been even greater than in grain raising.

Allusion has already been made to the Bessemer process of steel making.

My hearers are aware how great a matter steel is, that on our ability to make steel which shall be satisfactory both in quality and price, the whole question of transportation is predicated.

Well, it so happens that in steel making both under the Bessemer and open hearth processes the productiveness of labor is anywhere from 50 to 100 times greater than under the old processes of hand making.

To illustrate: It came recently under the eye of your speaker that a subsidiary steel concern of the U. S. Steel company, located near Chicago, which carries on its pay roll sixty-two hundred (6,200) people, putting out daily in railway rails and other finished goods five thousand six hundred (5,600) long tons. If you shall use your arithmetic on these figures it will indicate to you that the average daily output per man reaches 2,023 pounds. This quotient (2,023), I beg you to keep in mind for purposes of comparison with the daily output under the old process which I beg to assure you on competent authority was from 20 to 40 pounds per day. Calling the latter figure (40 pounds a day) the more nearly correct of the two, we find the recent producing power in steel making to be fifty times as great as the old producing power and which, if expressed in percentages, would indicate a gain of five thousand per cent.

This crude array of facts and figures which we have presented may indicate the kind of skeleton way the nature of the movement we are contemplating. It, at least, points out whence we have come and whither we are tending. It is a part of the plan we are following to take up, next, some of the results material and otherwise which have followed this movement. Under the old order of things the days were long and at the end of the year there was nothing ahead. It stands to reason that if fourteen hours a day are spent in toil with no margin of profit in sight the toiler has no heart to think of schools, churches, citizenship and the like. But if, on the other hand, the toiler be clad, have a tight roof, can hire a little help, can "quit" at six o'clock, the world takes on a more roseate hue.

In fact, the increase in earning power which we have traced has been followed by its natural and legitimate results. Those results might be tabulated in some such form as this:

First—A higher scale of home comforts.

Second—A style of dress in keeping with the conventionalities of the world.

Third—The houses and barns of America are spacious and convenient and have moved farther and farther away from the old standard of the thatched hovel.

Fourth—that the wage rate for common labor which at the commencement of the era we are considering, say in A. D. 1769, was about 12½ cents per day, advanced in 1800 to 25 cents per day, thence has advanced in 1840 to 50 cents per day, thence had advanced in 1890 to $1.00 per day and has thence advanced down to the present to $1.25 per day. The wage rate, it will be noted, quadrupled itself within a century.

By the way, there is an old song popular with another generation, two lines of which ran as nearly as we can remember as follows:

> "Alas! that food should be so dear,
> And flesh and blood so cheap."

The art and beauty of that song remains, but, thank God, its pathos has long since departed, for under the new order of things it is flesh and blood that is dear and the food that is cheap.

But following the movement we have striven to outline were certain results not material in their nature, but which could never have come about except under a condition of material prosperity, we have especially in mind as following along in the wake of our material prosperity two notable institutions, first, our free school system, and, second, the periodical press with their infinite resource of instruction and diversion.

It is proposed next to look for the moment at the subject from a missionary point of view. In the geography we studied in the early sixties it was set down that one-sixth of the population of the globe were nominally Christian and the economic movement we are considering is reaching only a small part of the one-sixth. In fact, up to the present time it is largely confined to the English-speaking nations of the world.

But there is reason to believe that at no distant day America's new economic movement may effect the agricultural regeneration of Russia. In this matter I shall content myself with a statement touching the extent of our exportation into Russia of American farm machinery and leave the rest to your imagination.

In the spring of 1901, within a certain twenty days, twenty thousand tons of mowers, reapers, threshers, harvesters, cleaners and rakes were shipped from New York alone to Russian ports.

During the months of April and May, each year, the wharves at Odessa and other Black Sea ports are lined for miles with American agricultural machinery. Heavily laden, trains depart daily for every part of European Russia, with no other freight than farm implements. The big cases containing the carefully numbered parts are distributed at cities, towns and way stations. At the bank of the rivers great barges wait in readiness to float their quota up or down stream and where the railroad ends toward Asia long caravans of camels take up the load and carry it to far off corners of the Russian empire, where the patient "ship of the desert" is driven in harness to reapers and mowers of America.

And a heart of stone has that man who does not rejoice that in the near future the brightness of the American home may be duplicated in remote Asia.

Finally, by way of a last word on the industrial regeneration we have been contemplating, and by way of throwing a flower into the grave of the pioneers of that movement, I beg to say that had it so happened that Jas. Watt was not born and that Mr. Whitney, Mr. Cartwright, Mr. McCormick and Mr. Bessemer did not come among us and live their lives among us into the encircling gloom, then the thatched hovel with its attendant poverty would still be the home of the race. While the free school and the periodical press would still await the creative fiat.

In the great and beneficient movement which we have outlined there is no regualr methodical paid helper except the agricultural college. Its function we may define as one to carry forward and complete so far as possible the work already begun of assisting the human hand in its producing potentiality. And that school best does its work which with men and apparatus is best equipped for constructive work. We mean by that expression, or wording "constructive work," work which will send forth men and women to block out the kind of work already done on new lines. Not to do this is, we believe, to let our civilization lag and degenerate.

Finally, if from the point of view of the farmer and artisan, there be any necessary education in the modern state, the education the agricultural college is of that sort and our legislature shall fall short of its duty to the taxpayer if it does not give the state college at Ames a liberal support.

THE VALUE OF AN AGRICULTURAL EDUCATION TO THE FARMER BOY.

I. W. Hutchins, Before Kossuth County Farmers' Institute.

This is the first time that I have ever attended one of our Farmers' Institutes.

I feel somewhat as did the gentleman who was visiting the penitentiary for the first time. He was asked to address the inmates. Being at a loss as just how best to open his remarks he began by saying, "I am very glad to see so many of you here."

We commenced as a people by winning our independence, and when we came to examine the article of liberty secured, the picture was found too large for its constitutional frame. As a nation we were held together for a time, but never united. It required the civil war to enlarge the setting of the jewel of liberty and this war taxed every iota of our resources in order to preserve the union of the states. After the war we started out to develop our country. So much virgin soil was ready for the farmer, such great opportunities lay waiting for the manufacturer and science gathered up the tears a nation was shedding for her heroic dead, and converted them into steam that turned the tireless bands, the countless wheels of toil. During the past generation no nation or times have seen such wealth producing periods. The one great idea has been "get rich quick."

Great cities have sprung up with greater opportunities for acquiring wealth. Labor saving machinery displaced nine out of every ten farm laborers and the feverish spectacular life of the city said "Come" and the country boys and girls flocked to the city, leaving the simple isolated life of the country.

But the ebbtide is setting back from the city to the country. Never before has there been such interest manifested in agricultural pursuits. Forces are at work today that will make farming a business that must be conducted in a business-like way, a profession, if you please, and he who would follow it must, if he is to be successful, prepare himself for this work.

We readily concede that the business man, the lawyer, or the doctor should be especially educated for his chosen pursuit. Invariably we patronize the man who is the best prepared for his calling. Why should not the farmer receive instruction relative to his pursuit as well as these? There is no other calling wherein one could use a great diversity of knowledge to so good advantage as can the agriculturalist. He comes in contact with all of the other professions and in addition is especially concerned with the forces and laws of nature with which he must deal. Congressman H. C. Adams is quoted as saying: "If any young fellow asks my advice about making farming a business I ask him, 'Are you man enough? If not, don't do it, but go and be a lawyer or a doctor or a preacher or something of that sort.' "

We as a Nation are young in years. Our people have been too busily engaged in pursuits other than agricultural to give to the latter much attention. Nature has been so extremely kind that he who would sow, even though the seed were mediocre, could reap a profitable harvest. Why, anybody could farm. He who failed in any other line of work could make a living by going to the country. They were as confident of their ability here and their success almost as marked as was that of the lawyer who, broken in health, sought to renew his strength by outdoor labor. With this idea in mind he applied to a farmer for work and was asked that question which is asked everyone today, "What can you do?" "I can do anything that anybody else can," was the prompt reply. "Very well, sir; take this stool and pail, go down yonder to the woods pasture and milk that large red cow." After nearly two hours had expired, the man not having returned with the milk, our proprietor went down to the pasture to see what might be the difficulty. There he saw his man, pail and stool in hand following the old cow around the pasture. "See here, sir, what is the trouble?" "I've been following this old cow around for an hour and a half trying to get her to sit down on this stool so I could milk her."

The natural tendency of the farm is to retrograde what has been the effect of our past practices? In New York alone one and a half million acres that once sold from $100 to $125 per acre are now selling from $30.00 to $50.00. Other New England states have met a similar fate. Men, having robbed one soil, yearned for new soils to rob. Their pathways may be traced by the fertility, or rather lack of fertility, in the different sections of our country.

These evil practices are going on today. Renting of land until it has been wasted by selfish motives has been carried too far. I need not take you very far to show you good examples of this fact. To perpetuate the productive capacity of the soil is an imperative duty. He who does not do this is wasting his capital stock. There is practically no virgin soil that can be obtained as were these fertile plains upon which we dwelt. The men can no longer treek to nearer fields.

Today success does not depend so much upon nature as it does upon the manner in which we deal with nature's forces.

The first stage in any nation's development is a strife for material gain; secondly, that of culture and learning. We have now passed the first stage. In our riches we should not lie down and subsist upon our plenty. "The problems to be met and solved on the farm are as great as those in any other calling." "In the near future the man with the old-time methods will be completely outclassed by the man with a training in his pursuit." It is the trained hands that have accomplished the great things in life, in art, literature and music. Genius is responsible for only one-half of the success of great men.

There has been much ridicule of the book-learned farmer in the past, and justly so.

Agricultural instruction has had to pass through its evolutionary period, as have all other things. They formerly sought to gain all instruction from books alone. Today they study the living cell, the plant, the animal, and the soil itself, and from books learn the laws which govern the constitution, the make-up, and development of these, the farmers' capital. I would emphasize this fact. *Agricultural instruction of today is practicable.*

Things are now being thought out before being done. *Thought* is your skilled engineer which directs your course.

"If your brain does not sweat you will have but little bread," for says the Bible, "By the sweat of your brow you shall earn your bread." The world is waiting for young men who know how, not only is this decidedly true in agricultural lines, but in the great industries as well, the trained mind is given preference.

I surmise that there are some in this audience who have been wondering what salary a graduate of an agricultural college could command. A servant girl applying for a position first asked what she might expect as compensation for her services. The mistress answered, "I will pay you whatever you are worth." "I never worked for so little as that in my life; good day, mum." The college man is willing to start with what he is *worth*, feeling confident that he can "make good." Two-thirds of the boys go back to the farms and are making a success of their work. Many more would gladly go back, had they a farm to which to return. I know of but few of my classmates who come under the latter heading,—one is in Washington, D. C., at a salary of $1,200, another is associate editor of the "Homestead," and a third has charge of a one thousand five hundred acre ranch in Dakota. I know of twenty-four graduates who have left the college since 1901, who are receiving an average salary of over one thousand five hundred dollars a year. However, "they are not the most successful in life who would keep the money returns for ever more always before them. The most satisfactory reward is that of a conscience telling us that we have made the most of our opportunity and have done the best we could with the talent entrusted to our care, that we have made the world better for having lived in it."

"Farmers as a class are apt to look only on what appears to them to be the practical side of the affairs of life and not to live in air castles or set up ideals in their minds to strive to attain yet all the advancement that has been made was conceived in the mind long before its realization.

"As long as the farmer was satisfied with his wooden plow there was no hope for improvement, but when the possibility of something better dawned upon his mind an improved implement took its place."

The second *fact*, which, it would seem to me should be strongly emphasized, is that one's ideals of life are raised to the point where he will *strive*. The greatest improvement comes in men who strive. Great achievements come as the result of effort.

"Education is to *know* for the sake of living, not to live for the sake of knowing. Science has done more than help the farmer to material gain. It opens up to him a world of things round about. He comprehends in the growing plant and the busy animal life an endless number of interesting facts, which before were mysterious, and which tend to make life interesting and intellectual. Not merely do books become more instructive to him, but as his mind develops there is more and more of interest in his life—more and more tending to elevate him above the mere drudgery.

Ruskin says: "There can be no happy labor without thought. There can be no happy thought without labor."

After all, the greatest study of man is man himself; how sadly has he been neglected in so many cases.

The problems of rural life are not only to make it more profitable, but more comfortable and enoyable. The question of the town vs. the country I believe will be settled by agricultural education. Our possibilities are boundless, limited only by the power of man to grasp them.

The farmers themselves are the ones to lift agriculture to a higher level; and to the young men belong the task. Do not mistake me for a moment as having said that he who has passed through an agricultural college has finished his building; but I do say that he has a foundation on which to build, the expense of which he will never regret.

Let all who may, improve their opportunity.

May I close with a little verse:

The farmer's trade is one of worth,
He's partner with the sky and earth,
He's partner with the sun and rain,
And no man lose for his gain,
Men may rise and men may fall,
The farmer, he must feed them all.

IOWA'S GREAT FARMING OPPORTUNITIES.

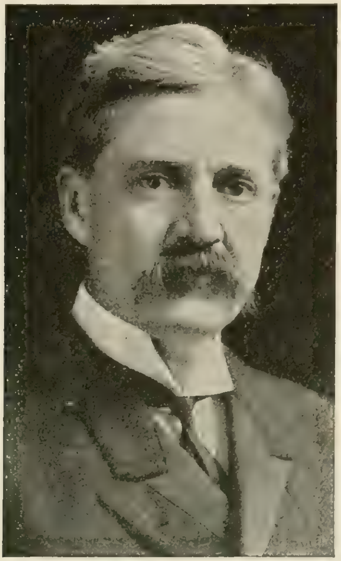
Reproduced by courtesy of Doubleday, Page & Co.

By Prof. W. H. Stevenson, Iowa State College.

How a Young Man Cleared $1,733, in One Year by His Own Labor—Anther Made an Income of $3,200 at an Expense of $125 for Labor—Twenty Acres Yield 100 Tons of Alfalfa Hay and Pasture Eighty Hogs a Whole Season—Big chances for the Experienced Stock, Dairyman, and General Farmer.

Governor Cummins of Iowa says:

"*The Iowa College of Agriculture and Mechanic Arts, of which Professor Stevenson is so excellent a representative, is a fine example of the wonderful development in recent years of the agricultural science. The United States presents so many instances of extraordinary and unparalleled growth that most of our people do not know what institutions devoted to the science of agriculture are doing for the material welfare of the country. I believe it to be true that the knowledge imparted by such colleges and the interest awakened through their efforts has added*



HON. ALBERT B. CUMMINS.

more, in the last decade, to the wealth of the Nation than all other discoveries combined. This may seem to be a startling assertion, but in truth it is exceedingly conservative. I take a single illustration among many that are in mind: The information that has been given within the last five years to the corn growers of Iowa with respect to the selection of seed corn, added this year not less than sixty millions of bushels to our corn crop. That is to say, we raised and harvested sixty millions of bushels more upon the same land than we would have raised and harvested under like conditions, had not science lighted up the way to better farming. All other agricultural products have been similarly advanced, and the aggregate good accomplished is as astonishing as it is gratifying.

"The study of agriculture has done something else even more important than to multiply production. It has ennobled and dignified the labor of the farmer. It has lifted up his calling to a higher rank among men, for his work now occupies his mind, as well as his hand. Under its inspiration, nature has unfolded new beauties, and the slice of earth that falls so gracefully from the plow has become to the boy who turns it more than a strip of black soil. It has made country life more interesting, and the country home more attractive. The result will be a check upon the tendency of bright, ambitious lads to leave the farm and the old folks for the gilt and glitter of towns and cities. In these days, books and papers are as necessary to the farmer as his agricultural implements—not story books nor political papers only, but scientific books and scientific papers. In a word, the farmer of the future must be a scholar. He must be a man of learning, not for embellishment but for efficiency."

"Iowa is especially the beneficiary of the new spirit of agriculture. We hope for diversification in our industries, but we know that agriculture will always be our paramount interest. There is no state in the Union that even approaches Iowa in the proportion of area capable of successful and profitable cultivation. It is therefore natural that our College of Agriculture stands as one of the chief exponents of our educational system, and I am glad indeed to introduce a distinguished member of its faculty to the American public."

ALBERT B. CUMMINS.

Iowa is not a state in which truck farming or intensive farming are the dominant or even important lines of agriculture. Farms which average in size about 160 acres and which are devoted to diversified farming, are the rule. Therefore, the landowners of Iowa do not make from one hundred to five hundred dollars per acre annually. But their business is profitable because the cost of production is low. This fact is proven in the following statements regarding the operations of successful farmers in various sections of the state. An honest effort has been made to give data which fairly represents the true status of farm conditions in order that the man who is in search of a location may accurately judge of the opportunities which are open in the different sections of Iowa.

WHAT SOME IOWA FARMERS HAVE ACCOMPLISHED.

1. A man who has for many years been a successful farmer in southern Iowa owns an 800-acre farm in Montgomery county on the Missouri loess soil. In 1905 this farm produced 11,000 bushels of corn on 250 acres. Eighty acres of wheat yielded 1,450 bushels; sixty acres of oats yielded 1,800 bushels; sixty acres of meadow produced 80 tons of hay, and one and one-half acres of potatoes yielded 300 bushels. The rest of the farm is in pasture. All of the crops except the wheat and potatoes were fed on the farm. The sales for the year were as follows: Eighty-five fat steers, $7,620; two hundred fat hogs, $3,470; twelve hundred bushels wheat, $912.50; two horses, $350; one hundred and seventy-bushels potatoes, $105. Nine thousand bushels of corn were bought at a cost of $3,000. This corn was fed to the stock which was marketed, in addition to the crops grown on the farm. The total income was $9,457.50. This fairly represents the annual income from this large southern Iowa farm. A farm like this one will not make a great fortune for the owner, but it is a safe and a profitable investment.

2. An energetic resourceful young man owns a 160-acre farm in the southern part of Cherokee county on the same soil. This farm is valued at $60 per acre. What this farmer has accomplished in one year is stated thus in his own words:

"Twenty-five acres of the farm are in pasture and twenty acres in clover meadow. During 1906 I grew forty-acres of Early Champion oats and marketed 1,500 bushels at twenty-seven cents per bushel, amounting to $405. Average yield forty-two bushels per acre. Twenty acres of wheat yielded twelve bushels per acre and sold at sixty-two cents, amounting to $148.80. Fifty acres of corn yielded forty-five bushels per acre and is all being fed. Market price is thirty-two cents at present. It will bring fifty cents by feeding to cattle and hogs. In a few days I expect to market twenty hogs and thirty-six steers, and they should bring at least $1,850. The cash outlay for these steers a year ago was $450, and $120 was spent for pasturing during the summer, leaving $1,290 to credit to corn. Poultry will net $200. Twenty acres of clover yielded one and one-half tons at $5 per ton. I have sold $200 worth of Reid's Yellow Dent seed corn and won over $400 in prizes on corn and garden products. Two acres are devoted to garden products, potatoes, etc., which were used on the table or fed to pigs. The entire farm work was done by myself with the exception of a few days' work in harvest, the cost of which was $22. I estimate the total expense for the year to be $900. This includes all feed bills, rent of land, all household expense and some breeding stock which was bought. This should leave a profit for the year's labor amounting to $1,733.00."

This interesting statement sets forth the essential facts regarding the lines of farming which are quite generally followed in this state and regarding the profits which may reasonably be expected.

The vast prairies are traversed by winding streams whose banks are studded with beautiful forest trees.

3. In the extreme western portion of the state there is a 160-acre farm which is only a few miles from the Missouri river in Pottawattamie county. This land is worth $100 per acre. The noteworthy thing about this farm is the splendid crops of alfalfa which are produced.

In 1905 sixty acres of corn produced sixty bushels per acre; five acres of oats, forty bushels per acre; eight acres prairie hay, two tons per acre; twenty acres alfalfa yielded one hundred tons of hay and pastured eighty head of hogs during the entire season; the remainder of the farm is in pasture. The sales for the year were as follows: Hogs, $1,140; cattle, $1,260; seed-corn, $80; hay, $35; one horse, $120; butter and eggs, $300.

The owner of this farm follows a four-year rotation system on all of the land except that which is in alfalfa and prairie hay. These fields will not be plowed as long as they produce paying crops. The manure is hauled on the pasture land with a spreader, as a rule as fast as it is made. This has been found to be the most profitable method of handling the manure.

4. A young man bought a 160-acre farm in Clinton county in the spring of 1906, for which he paid $75 per acre. Forty acres of this farm in eastern Iowa is in pasture. This season forty acres produced 2,800 bushels of corn; five acres of wheat yielded twenty bushels per acre; thirty acres of oats produced 1,200 bushels and thirty-five acres of hay, seventy tons. These crops are now being fed to cattle and hogs. A conservative estimate, based on present market prices for the live stock, places the 1906 income from the farm at approximately $3,200. The records, which have been kept with much care, show that $125 was expended for labor.

5. One of the chief sources of profit for the Iowa farmers is found in the gradual advance in land values. An investment in Iowa land is almost certain to increase in value, not by leaps and bounds, but steadily, year after year. The following example is cited to show to what extent land owners have profited during the past decade as a result of the increase in the value of farm property:

In 1895 a farmer from eastern Iowa bought an improved 160-acre farm in the southwestern corner of Carroll county for $50 per acre. This land would now find ready sale at $100 per acre. This farm has made it possible for the owner to accumulate a competence within a few years. The following data prove that this land is a paying investment at its present valuation.

In 1906 thirty-five acres of corn produced 1,575 bushels; twelve acres of barley yielded forty bushels per acre; fifteen acres of oats yielded thirty bushels per acre; two acres of potatoes yielded 125 bushels per acre, and twenty-five acres of hay yielded two tons per acre. The rest of the farm is used for pasturage.

With the exception of the potatoes, all of these crops are fed to live stock. Special attention is giving to raising young steers, which are sold as feeders at a weight of about nine hundred pounds, and to the breeding of registered Shorthorn cattle. A large number of hogs are also raised and finished for the market each year.

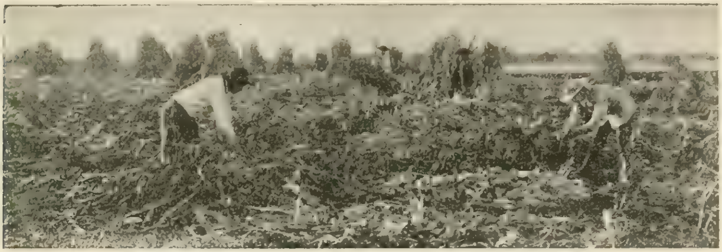
All of the work on this farm is done by an aged father and his son. In addition to his income from the farm, the latter receives a goodly sum each year for work done on neighboring farms.

6. A good farmer, with limited capital, has a splendid opportunity in Iowa to make money on leased land. For instance, a farmer in Monona county owns an eighty-acre farm valued at $110 per acre; but he farms, in connection with his home place, 400 acres, which he leases at $3 per acre.

In 1906 three hundred acres of corn yielded 16,000 bushels, worth $4,800. Forty acres of wheat produced 900 bushels, worth $525; twelve acres of oats yielded 700 bushels, worth $175. The net gain from sixty head of cattle amounted to $500, and $510 was received from the sale of hogs. The farm of 480 acres produced in one season crops and live stock to the value of $6,500. The farm expenses are given in the following statement: Husking corn, $550; harvesting, $75; threshing, $65; stacking grain, $75; wages of two men, five months, at $30 per month, $300; wear on machinery, $25; blacksmith bill, $18; rent of land, $1,200; total expense account of $2,258.

This farm is in the hands of a successful renter, but what this man has accomplished is merely indicative of the opportunity which is open to the industrious and business-like tenant in Iowa.

Within the border of Iowa is an area of more than thirty-five million acres, fully 95 per cent of which is arable land which may be made to produce something of value. No other state in the Union has so large a percentage of its domain available for agricultural purposes. This great body of fertile soil is divided into approximately 210,000 farms with an average acreage of 158½ acres. Of the total number of farms, 65 per cent are occupied by the owners and 35 per cent by renters. Practically without exception all of these farms are devoted to the joint production of crops and live stock. Fortunately only a limited number of farmers in this state grow grain and forage crops exclusively. By far the greater portion of the grain is fed to live stock. This system of farm management tends to maintain the fertility of the soil, and it is a well known fact that the live stock farms of Iowa have apparently not as yet been reduced in productive capacity, even in the smallest measure. Commercial fertilizers have not found a market in Iowa and not one farmer in a thousand here knows anything about the nature of these products. Is not Iowa land, which is in superior physical condition and which possesses a liberal supply of all the essential elements of plant food, and which does not require annual applications of expensive commercial fertilizers, cheaper at fifty or even seventy-five dollars per acre, than much



During the fall and winter the corn is husked from the shock. The nutritious, brown stover adds largely to the farmer's store of roughage.

In October corn is ready for harvest. From daylight till dark the work is pushed to garner every ear before the snow lies deep of the so-called "cheap" land in other sections of this country which fails to produce crops except when heavily manured and fertilized?

The records of the Iowa Weather and Crop Service during the past thirteen years show that the state average of rainfall has been 31.07 inches annually. From an agricultural point of view the most important feature of the climate of Iowa is that its maximum of rainfall comes in the crop season, April to September, inclusive. In the six crop months the average rainfall is 22.48 inches, or 71 per cent of the annual total and in the four most critical months, May 1st to September 1st, the average for the state is 16.29 inches, or 51 per cent. Although there are fluctuations in the amount of rainfall in the crop season, the records of the past half century show that there has never been a crop failure and fairly good crops have been produced in the driest or wettest seasons. The land seeker is asked to contrast the value of Iowa lands under these moisture conditions with the value of lands in regions of limited or uncertain rainfall or in those sections where irrigation invariably introduces an element of expense and uncertainty.

Stating the load. The hay loader saves much time and labor.

Cheap land, in the sense in which this term is applied to land values, can not be bought in Iowa. But land at a cost of seventy-five and even one hundred dollars per acre never fails to prove a splendid investment in the hands of a man who puts into practice those methods of farm management which maintain the fertility of the soil and produce large crops of high quality. On the other hand, almost certain failure awaits the farmer, on this high-priced land, whether he be owner or renter, who lacks training and experience. This is true because farming in this state is a business which demands a high order of executive ability as well as a considerable fund of technical knowledge.

There are large opportunities in Iowa for land owners and renters of experience along the lines of general crop growing, live stock production and dairying. Practically the entire state is adapted to the growing of corn, oats, barley, potatoes, hay, wheat, rye, timothy seed, millet, alfalfa, clover seed and buckwheat. This state is in the center of the great corn belt. Corn is the money crop. The area in corn each year varies from nine million to nearly ten million acres. First-class corn land may be bought in each of the ninety-nine counties at prices ranging from fifty to one hundred dollars per acre. A farmer can successfully grow corn each year on about one-half of the land which he keeps under cultivation. That portion of the cultivated area which is not in corn must be devoted to secondary crops and legumes. This system is essential to maintain the fertility of the soil and keep the land in such condition that maximum corn crops may be grown. A very limited acreage of the three latter crops is grown at the present time. On this basis, a quarter-section farm, with forty acres of permanent pasture, would produce annually sixty acres of corn. On a well-managed farm the yield should be at least sixty bushels per acre. The average yield of corn in the state in 1906 is estimated at about forty bushels. This corn crop, at a valuation of 35 cents per bushel, represents an income of $21 per acre, or a total income of $1,260. The cost of raising and marketing corn under Iowa conditions is about $5 per acre. It is evident that the "corn land" returns a handsome profit on the investment.

But what of the other crops. Many Iowa farmers this season raised oat crops valued at $10 to $18 per acre. If thirty acres of this quarter-section farm were in oats, which yielded 50 bushels, the crop is worth $12.50 per acre, or $375 for the thirty acres. Let us assume that thirty acres of clover hay yielded 2.5 tons per acre. This crop is worth in the aggregate about $400. The forty acres of pasture should yield products with a value of at least $10 per acre. This 160-acre farm then gives an income from the principal crops, corn, oats, clover and pasturage, of approximately $2,500. If these crops are fed to live stock, as they are in large part on the majority of Iowa farms, this income should be increased by a considerable sum. In addition, poultry and eggs should increase the income by one or two hundred dollars. On this basis the 160-acre farm brings the owner an annual income of approximately $3,000. We deem this a very conservative estimate, but these data prove very clearly the fact that there is abundant opportunity in Iowa today to grow corn as the money crop at a satisfactory profit, even on high priced land.

Infinite variation is possible with respect to secondary crops, which may be grown in rotation with corn. This is an important fact. Opportunity is thus afforded the farmer to grow those crops which are best adapted to the local soil conditions and to the scheme of farm management, which is desirable for different reasons, as for instance, the force of men and teams which is available.

Within the last decade, Iowa farmers have learned how to grow alfalfa. This crop is now raised on limited areas in many sections. Alfalfa can be successfully grown in nearly all parts of the State; it yields in a

The corn is securely cribbed. From here it will go to the feed yard or to the elevator.

single season three or four cuttings, which produce four to six tons of hay per acre; it has a high feeding value and it enriches the soil. Well-drained and rich soil is essential for this crop and the best results are generally secured by seeding in late summer, from the 5th to the 15th of August, at the rate of fifteen to twenty pounds of seed to the acre. However, spring seeding proves successful in many cases, especially on the loess soils, fully described later.

When the rack is full the loader is detached from the wagon

Four years ago, Captain Smith undertock to grow alfalfa on the rolling loess soil on his farm in Woodbury county. Forty acres of land were heavily manured, especially on the top of the hills. The alfalfa was seeded about the middle of April, without a nurse crop, at the rate of fifteen to eighteen pounds per acre. The soil was not inoculated. A perfect stand of alfalfa was secured. One year after seeding, this forty-acre field pastured 300 hogs during the entire grazing season and yielded three cuttings of splendid hay. A total crop of over four tons of hay per acre on land which pastured eight hogs per acre, during the season! The alfalfa grew luxuriantly on every portion of the field; the hay was cut and handled in such a way as to save the leaves and was fed during the winter to two hundred fattening cattle, with the best results.

Captain Smith is known as one of Iowa's most successful cattle feeders. He states that with corn and alfalfa hay he can secure the very best results in his cattle-feding operations, and he finds it much more profitable to grow and feed alfalfa than to balance his corn ration with bran, oil meal, cottonseed meal or other high-priced nitrogenous feedstuffs.

Iowa is a land of opportunity for the stock man. And where in all the world are conditions more favorable for this great industry? Splendid bluegrass pastures, immense crops of corn, oats, barley, clover, timothy and alfalfa, six great lines of railroads extending across the state and capable of delivering train loads of stock in Chicago within a few hours after the cars are loaded. Exceedingly favorable climatic conditions and breeding stock which is unsurpassed in quality are the factors which cause this state to abound in opportunities for breeding pure-bred live stock and for finishing all classes of stock for the greatest market in the world.

The same factors which contribute to the success of the live stock industry of the state make Iowa an ideal dairy region. The northern and northeastern parts of the state are usually designated the dairy districts; but the largest amount of increase of creamery made butter, during the past two years, has been in the southern half of the state. Some of the lowest-priced land in Iowa is located in the southern portion of the state. This is a natural grass region and is peculiarly well adapted to the production of those crops which put dairying on a profitable basis. The shipping facilities of this region are excellent. Therefore, this portion of Iowa is recommended to all parties who are in search of a locality in which dairy farming may be made highly profitable.

The Iowa farmer is not content with one modern binder

During the last few years a large number of establishments which pay the highest market price for poultry and eggs have been located in various parts of the state. The steady demand and the high prices for these products have greatly stimulated production, and many farmers now find that their poultry and egg departments are as profitable as any on the farm. This industry is carried on successfully in all portions of the state, usually in connection with the other lines of farm production, and is one of the factors which add very materially to the chances for success in diversified farming, which is the dominant type in Iowa.

It is a noteworthy fact that these opportunities along agricultural lines are not open only to the man who has the capital with which to buy land. Thirty-five per cent of the farms of the state are in the hands of renters. Competent renters, and particularly men who handle live stock successfully, are in demand. This class of farmers can secure productive farms on very favorable terms. Cash rents run from two to five dollars per acre. A great many good corn farms are leased for $3 to $3.50 per acre. On this basis, the renter has abundant opportunity not only to make a comfortable living but to gradually accumulate a fund which, in the fullness of time, will assure the ownership of a farm. At the present time, farm laborers command high wages. In no section of the state

The great field of oats makes busy days during harvest.

is the supply equal to the demand. Able-bodied young men have no difficulty in securing work on well-managed farms at wages varying from twenty-five to thirty dollars per month for the entire year.

THE SOILS OF IOWA.

With the exception of the northeastern part of the state, the whole surface of Iowa has in times past been overrun by great continental ice sheets similar to the ones now covering the surface of Greenland. The sheet of earth debris left after the ice melted away is called glacial drift, or till, and may easily be recognized by the fact that usually it is a rather stiff clay containing pebbles of all sorts, as well as large boulders or "nigger heads." In this respect it contrasts markedly with the loess, which very rarely contains small pebbles. This glacial till is very thick; in Iowa it averages 200 feet, and in some places is thought to be as much as 500 feet in thickness. Four ice sheets, each making a corresponding sheet of glacial drift, invaded Iowa at different times, but only one, called the Kansan, ever succeeded in covering the southern as well as the northern counties of the state. As all these ice sheets did not come from exactly the same direction, there is some difference in the character of the material which they brought.

The crop will soon be in the shock and then the threshing crew will pull into field.

The Wisconsin is the largest drift sheet in the state. It is for the most part in practically the same condition in which it was left after the enormous mass of ice which covered it melted away, except that it is now covered with vegetation. A few larger streams, such as the Des Moines river, flow across it, but these rivers are so new that their tributaries do not extend very far back from their main channels. Nearly the whole territory is as yet a monotonous stretch of prairie, liberally dotted with undrained ponds, sloughs, and lakes, many of which contain accumulations of unrotted peat. On both the eastern and western borders of the area are stretches of low hills which are the terminal moraines made by the ice sheet.

The soil of this belt is principally a black loam, sandy in some places and clayey in others. It is generally rich in the elements of plant food and frequently contains small boulders.

In consequence of the absence of natural drainage lines the surface of this area is frequently so marshy and water-logged that agriculture can be carried on only at a disadvantage. An adequate drainage system is rapidly being secured by the energetic farmers of the region, who are putting in thousands of miles of tiles each year. The ponds are being emptied of their water and the areas covered by them brought under the plow. The time will speedily come when this entire area will be as perfectly drained as are the older settled sections of Illinois.

As fast as these ponds are drained, however, another nuisance of a totally different character frequently develops in their place. This is signaled by the appearance of so-called "alkali spot," which appear as a white efflorescence in a band of greater or smaller width around the margin of the former slough. Wherever this is noticeable, corn makes a stunted growth and frequently yields nothing. The farmer who has gone to the trouble and expense of tiling out a swale is frequently annoyed by the appearance of this new and unexpected trouble. Alkali spots cause very much less trouble than ponds, and their probable appearance should in nowise deter the farmer from draining such places. Another difficulty yet to be overcome is met in the small areas of peat which are found in the flatter regions. The man who desires to buy land in this section of the state should give special attention to the alkali, peat and drainage problems.

The Iowan drift area lying east of the Wisconsin and covering all or part of the counties of Worth, Mitchell, Howard, Cerro Gordo, Floyd, Chickasaw, Winneshiek, Franklin, Butler, Bremer, Fayette, Clayton, Hardin, Grundy, Blackhawk, Buchanan, Delaware, Clinton, Cedar, Jones, Linn, Benton, Tama, Johnson, Poweshiek, and Marshall, is older than that of the Wisconsin. A great many of the swales left by the melted ice have been filled up or drained out by natural processes, and natural drainage lines are being developed. The excess rainfall has much greater opportunity of flowing away of its own accord than is the case in the area to the west; this of itself would serve to distinguish the two areas. But the most obvious characteristic of the Iowan till is the enormous size of the granite boulders it contains. The boulders of the Wisconsin till are mere pebbles in comparison. These large ones are not sufficiently numerous to interfere seriously with tillage.

The soils of this belt do not differ very much from those of the Wisconsin; peat bogs and alkali are very much rarer. Because of better drainage, there are localities where leaching has been active. Such are usually deficient in lime and much below the normal in productiveness. With the exception of the small pieces just referred to, the soil is fertile and well adapted to all crops grown in the state.

The Missouri loess is found throughout the area covered in whole or in part by the counties of Lyon, Osceola, O'Brien, Sioux, Plymouth, Cherokee, Buena Vista, Sac, Ida, Woodbury, Monona, Crawford, Carroll, Guthrie, Audubon, Shelby, Harrison, Pottawattamie, Cass, Adair, Adams, Montgomery, Mills, Fremont, Page, and Taylor. The loess is the only surface material throughout this region, except on bottom lands and steep slopes. It has been washed from the latter, exposing the glacial till.

The loess in this area is of a less clayey nature than in other parts of the state. The soil of the loess has no true subsoil; the seed-bed of the farmer is merely the upper part of the deposit more or less darkened by humus. It is a splendid corn soil. The very deep loess which occurs along the Missouri river, from Sioux City to the Missouri boundary, is a deposit which in nature and origin is reduplication of that of the valleys of the Rhine and the Moselle in Germany, which are world-famous for their vineyards. In the southern part of this belt of deep loess, grapes flourish better than elsewhere in the upper Mississippi valley, and a great industry in this branch of horticulture is slowly but surely coming into existence there.

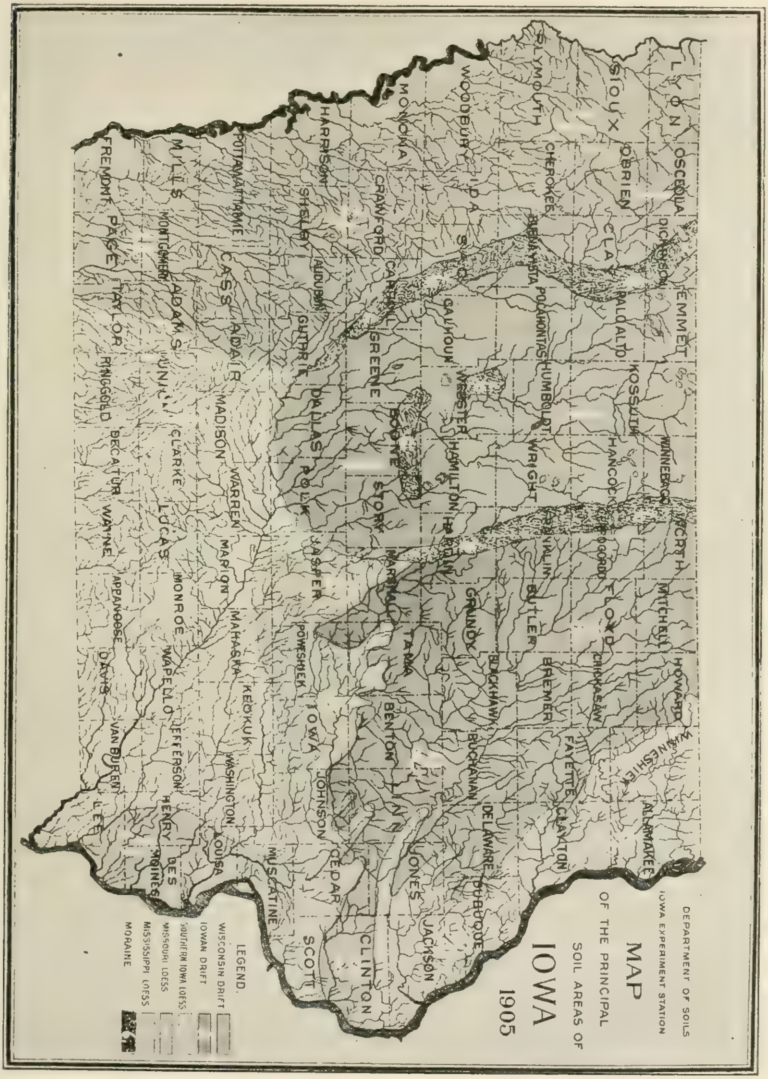
The southern Iowa loess, which covers, in whole or in part, the counties of Adair, Madison, Warren, Marion, Mahaska, Keokuk, Washington, Adams Union, Clarke, Lucas, Monroe, Wapello, Jefferson, Henry, Lee, Van Buren, Davis, Appanoose, Wayne, Decatur, Ringgold, Taylor, Muscatine, and Louisa, is of a somewhat different nature from the Missouri loess. It is not so deep, also whiter in color and more clayey in nature; under favorable conditions, it forms a better wheat soil than the latter; it is doubtless poorer in lime. It does not cover the greater part of the land surface, but is found principally on the divides and hills, the flanks of which expose large areas of till. As a result two radically different soils occur side by side throughout the southern part of the state. Often a farm will lie upon both. It is easy to distinguish them by the following rule: The till is a stiff clay, full of gravel and boulders; the loess is a porous soil, always found on the higher levels, and contains no gravel or large stones.

The Mississippi loess, which occurs along the Mississippi river and in portions of southeastern Iowa, appears to be intermediate in character between the others. It contains less lime than the latter and is not so clayey as the former. It resembles the Missouri loess, but could scarcely be confused with that of southern Iowa. It forms a good corn soil. In the northwestern part of the state the loess does not cover the whole country.

The loess of Iowa is a peculiar fine-grained material which covers half of the area of the state.

It is generally light-colored, being in various shades of buff and yellow, sometimes whitish. Although it has much of the appearance of clay, it is never so fine and plastic and rarely makes good brick. It is quite porous in spite of its fine textured appearance; 80 per cent of the particles composing the loess are smaller than grains of fine sand, but are coarser than clay. This is a fortunate circumstance and the one to which loess owes its value as a soil. Its porosity is such that it easily rids itself of excess water and yet, where it is not too deep, it is enabled to draw up from below sufficient moisture for growing crops. Extremes of wet or dry weather, which parch or drown out other soils, have little effect upon loess soils. Loess rarely contains large pebbles or stones. It is usually thickest on the tops of the hills and divides, and along the larger streams.

In some of the most broken regions of southern Iowa, tile drainage is almost as necessary as in some of the flattest regions of the Wisconsin drift, but for a different reason. This is on account of the peculiar relations of the loess and the till. The loess, it will be remembered, here occupies the higher levels and is a rather porous clay; the till is more stiff and impervious; the former absorbs water readily; the till does not. So the water flows underground over the surface of the till until it comes to a place on the side of the hill where it seeps out. This is the reason for the existence of the "spouty" places which are quite generally to be found on the hillsides of southern Iowa, and create a situation which only tiling can remedy. One hears a great deal in southern Iowa about "hardpan," but it is nothing else than the till, which forms the impervious material under the loess.


DEPARTMENT OF SOILS
IOWA EXPERIMENT STATION
MAP
OF THE PRINCIPAL
SOIL AREAS OF
IOWA
1905
LEGEND.
WISCONSIN DRIFT
IOWAN DRIFT
SOUTHERN IOWA LOESS
MISSOURI LOESS
MISSISSIPPI LOESS
MORAINE
LYON
OSCEOLA
DICKINSON
EMMET
WINNEBAGO
WORTH
MITCHELL
HOWARD
WINNESHIEK
ALLAMAKEE
SIOUX
O'BRIEN
CLAY
PALO ALTO
KOSSUTH
HANCOCK
CERRO GORDO
FLOYD
CHICKASAW
FAYETTE
CLAYTON
PLYMOUTH
CHEROKEE
BUENA VISTA
POCAHONTAS
HUMBOLDT
WRIGHT
FRANKLIN
BUTLER
BREMER
WOODBURY
IDA
SAC
CALHOUN
WEBSTER
HAMILTON
HARDIN
GRUNDY
BLACKHAWK
BUCHANAN
DELAWARE
DUBUQUE
MONONA
CRAWFORD
CARROLL
GREENE
BOONE
STORY
MARSHALL
TAMA
BENTON
LINN
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JACKSON
HARRISON
SHELBY
AUDUBON
GUTHRIE
DALLAS
POLK
JASPER
POWESHIEK
IOWA
JOHNSON
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CLINTON
POTTAWATTAMIE
CASS
ADAIR
MADISON
WARREN
MARION
MAHASKA
KEOKUK
WASHINGTON
MUSCATINE
SCOTT
MILLS
MONTGOMERY
ADAMS
UNION
CLARKE
LUCAS
MONROE
WAPELLO
JEFFERSON
HENRY
LOUISA
DES MOINES
FREMONT
PAGE
TAYLOR
RINGGOLD
DECATUR
WAYNE
APPANOOSE
DAVIS
VAN BUREN
LEE

The prinicpal soil areas of Iowa.

The present topography of the whole of southern and western Iowa is rolling. It would be hard to find in the whole region a quarter section of land that has not been reached and drained by some natural drainage channel. The surface has been cut up by streams into a succession of valleys and divides. As showing the difference in this respect between the oldest and the newest sheet of drift it will be interesting to compare on the accompanying soil map the number of streams flowing through such counties as Page and Ringgold with the number to be found in such counties as Pocahontas or Buena Vista. An examination of the map will reveal several other indications of the differences in the topography. In the rugged southern counties, the railroads follow the streams or dodge over the divides by the easiest route; they are therefore necessarily crooked; in the flat Wisconsin area they disregard the streams and go in straight courses for many miles. The Wisconsin area is dotted over with numerous lakes; the lakes, which once must have stood on the Kansan, have long since been drained and their basins obliterated.

It is not to be inferred, however, that drainage by tiling is superfluous in this region. The extensive bottom lands need it very much. The flatter divides also would be benefited by it.

The fact that Iowa is decreasing in population has been the subject of much comment by newspapers and magazines during the last few months. Better systems of farm management, improved agricultural machinery, and state-wide prosperity which has sent thousands of landowners to the towns and cities, are among the factors which have reduced the rural population. This reduction in population, however, is not an indication of agricultural retrogression. Iowa soil is no less productive; the present season brought unbounded prosperity to the Iowa farmer. The land is all farmed, but under present conditions, with larger and better machinery and with vast areas in permanent pasture, fewer men are required. Iowa is as truly the land of agricultural opportunity today as it has been for a period of more than half a century.

SHOULD THE YOUNG MAN WHO INTENDS TO BECOME A FARMER SPEND TWO YEARS OR MORE IN OBTAINING A COLLEGE EDUCATION OR SHOULD THE TIME BE SPENT IN GETTING A FINANCIAL START?

Robert Johnson, Primghar, Iowa, Before O'Brien County Farmers' Institute.

The question of obtaining a better education or spending the time getting a financial start is one that confronts every young man, the more anxious he may be to succeed, the more seriously will he consider this proposition. The requirements of a successful farmer are increasing as rapidly as in other vocations in life. Farming nowadays is not a means of existence, but a business, and the more it is conducted on a business basis the more profitable it becomes. The young man who expects to succeed must have the practical education that is necessary to succeed.

Then, to the financial side, is a very important one. In order to be a farmer in the full sense of the word, one must own a farm, which is certainly the aim of every young farmer.

While our fathers homesteaded their farms, we must pay from eight to twelve thousand dollars for them. There is no business where we are so dependent on our capital to get more capital with as farming. In fact, it is necessary to have about one thousand dollars to start with, even in a small way. While on the other hand, the man that receives a salary of one thousand dollars can spend it all and still be in a position to earn the same salary, or even more, the next year.

But then the educational side of the proposition must be considered, for even if a common school education is sufficient now, the changes in a lifetime are too uncertain to depend on it entirely, and the ambitious man may go further than owning one farm. In fact, it is very hard to tell how far he may go. The more ambitious you are to get a start, the more ambitious you should be to get an education. Don't farm for the mere satisfaction of farming, but farm to make money, to mke a success of it, and the satisfaction will go with it. There is getting to be more young men choosing farming as a business of making money, and less of them farming just because their fathers did. Men with an education, after considering their opportunities and chances of doing other things, are deciding that they can obtain better results for the same amount of effort on the farm. These are the men who will prove an honor to the calling. There is hardly any calling that has as many hangers-on as farming; for, as the saying is, any one can farm. It is true that a man who is too worthless to make an existence at anything else can make a living farming, but this class of men degrade farming. But at the same time it is certainly encouraging to the young man that is willing and anxious to make a success of it. I am not sure about the merits of a regular college course for a young man that is anxious to succeed as a farmer. The time and expense is so great that it makes a considerable item in his getting the necessary financial start. Then, so long a time away from the farm tends to dull his interest in the farm work. But I do think it would be of practical value to take a short course in some agricultural college.

The successful farmer nowadays won't have time to find out everything for himself by experience, but must learn in as short a time as possible the quickest and best way to do things that others have learned by experiment and experience. This kind of an education is of real value to the farmer. It makes it possible to save and make money, that he otherwise would have had the time to learn by experience; providing that he has the ability to make money enough to put his education into practical effect; and on the other hand, if he hasn't the ability, the time and money that he has spent in getting an education won't save him if spent in getting a financial start.

Just what to do in this world and the best way to do it is a proposition that confronts everyone starting out for themselves. The more anxious they are to succeed, the harder it will be for them to decide; but an education is a pretty good safeguard. To commence farming without an education is to leave the best farming implement off the farm.

WHAT IS UP-TO-DATE FARMING?

U. J. Howson, DeWit, Before Clinton County Farmers' Institute.

EDUCATIONAL FARMING.

There is no longer any failure to realize that farming, at least in certain branches, must become a scientific profession, instead of being conducted in a hit-or-miss style as in years gone by; that there must be opened to farmers the chance for scientific training. This education of the farmer, "self-education by preference," but also an education from the outside as with all other men, is peculiarly necessary here in this country where the old conditions, even in the newest states, have now nearly vanished; where there must be a substitution of a more intensive system of cultivation from the old wasteful farm management, and where there must be a better business organization among the farmers themselves.

Great progress has already been made among the farmers by the creation of farmers' institutes, of dairy associations, of breeders' associations, horticultural associations, and the like. I know of nothing which should attract the attention of a young man or woman, interested in farming, so much as the contest at the county institutes. It means two weeks' short-course scholarships at our great agricultural college at Ames if you win one of the premiums. But, if you do not win a premium, you have not "lost out," for you get two days' instruction from one of the best corn judges in the state, And I think no time or money could be better spent than that. The prejudice against up-to-date farming or "book farming," as some call it, that was so prevalent a quarter century ago, has pretty generally disappeared. There may be a few back woods sections in which the inhabitants are half a century or more behind the times, where people may still be met with who are inclined to talk rapidly against what they regard as nonsense of up-to-date farming. But if we compare the sorry looking crops of many of these farmers with the fields of the men who are practicing scientific farming, we will generally find their old methods are not showing results that prove the wisdom of their criticisms of up-to-date farming.

Good seed is necessary for a good crop, but large yields do not always follow the planting of good seed, but in nearly all cases where a man has thoroughly prepared his seed-bed and planted good seed and gives it thorough cultivation, he has no cause for complaint at harvest time. During the last two years the results of scientific methods of feeding cattle have been shown by actual test and competition for years at the great international live stock exposition and other live stock shows.

The science of draining low lands and of the fertilization of other lands with the elements of the soil most lacking for crop products, have all been demonstrated to the satisfaction of the men who have made and observed the tests.

WINTER AN IMPORTANT SEASON.

Many people are inclined to regard winter as wholly a resting spell for the farmer. The inexperienced speak of the chores on the farm in winter and the cutting of the year's supply of wood as employment so light as to hardly more than give the farmer the exercise he needs. To the man who has had active experience on a profitably operated farm, the work of winter will be recognized as fully as important as that of any other time of the year. If the farmer is paying the proper attention to keeping up the fertility of the soil and making the most possible revenue out of his farm, his chores in winter will not be light. He will plan for his winter's work. The feeding and care of enough live stock to consume all the fodder and the greater portion of the grain raised on the farm during the summer. However, crops should not be taken off the farm year after year without any equivalent return in the form of fertilizers; and it will invariably be noticed that the farmer whose crops and fields show a fine fertility of soil, is the man whose yards are alive with stock of various kinds, converting feed into beef, pork, mutton and fertilizers, the latter to be of great value on the farm the coming year. On that account the winter season of the "up-to-date" farmer, who is making the best success of the business, is one of the busiest seasons of the year. It takes good mental, as well as physical effort, to work out a campaign of feeding in which there will be good profits; but the results are always worth the effort. If the farmer finds a market at home for his hay and grain, at good market prices, and leaves on the farm a good stock of valuable fertilizer, it is a winter's work well spent.

WOULD NOT LIVE ON FARM.

It is true that some people that live in the city could not be induced to go on the farm to live for love or money. They say it is a dull, miserable life to live. But let me tell you right here the "up-to-date" farmer is strictly "in it" now-a-days, and what I mean by the "up-to-date" farmer is the one that has the improved styles of machinery, thoroughly prepares his seed-bed and plants his crops as I have stated in preceding pages. Good barns to store them in and plenty of well bred stock to consume what he raises. He also has the telephone and gets all the latest news almost before it gets in print, also the rural free delivery right at this door every day; and then some people in the city say farmers are deprived of more pleasure than they are. Very well, two-thirds of the people living in the city don't live near as well as those on a farm, where you produce nearly everything consumed. Having lived on a farm for nearly forty years, I know, and am sure, I have as much pleasure as those people living in town.

ENTERTAINMENT ON THE FARM.

Could the farmers of this country who feel dissatisfied with their position in life and yearn for a life of more variety and excitement, but know of the actual grinding monotony of commercial life for the dealers and workers in other lines of industry, whose net incomes at the end of the year are considerably less than their own, they would be less inclined to chafe under their condition in life. There is a great variety of entertainment in farming if the farmer will but educate himself to get entertainment out of his life work. Study of the scientific side of farming is the thing, experiments of various cultivations of various crops, fertilization of soil and experiments in fattening animals, or increasing the milk production from cows, or the egg productions from fowls, are real and constant sources of entertainment, too, as they afford increased income to the man who is entertained, while most other entertainments are available only by an outlay of cash.

The failure to employ modern methods of lightening labor inside the house is a great hardship on many farms. Thoroughly planned, conveniently constructed, and carefully arranged buildings are as essential in the country as in the city. The arrangements being made, many improvements will suggest themselves, until a home adapted to the use for which it is built will be the result. The man who can make two blades of grass grow where one grew before, has done something, and the man who makes one step do where it took two before should also be given credit.

BOYS ON THE FARM.

So much is said and written now-a-days in the way of advising the boy to stay on the farm, that we would like to say a word right here. The impulse which leads young men away from the farm is the desire to know more, and every man who is worth his salt has such ambitions. To advise such a fellow to stay on the farm and to be content to go on uneducated is to persuade him to suicide. We advise a young man to obey the impulse to learn something. Leave the farm a few years and attend some agricultural college. Meet the best boys of the state, "for they are there." Spend your happy college years with them, in the enjoyment of college life,—the best, the fullest, the richest life a man can live,—and then go back to the farm. Then I assure you you will find a farm managed by an "up-to-date" farmer.

THE PLOUGHMAN'S EDUCATION.

Prof. Geo. H. Colbert, Maryville, Mo., Before Page County Farmers' Institute.

Forty years ago the best medical school of the East made little or no scholastic requirement of those who entered within its walls as students. Any one who could read and pay the fees was admitted to the course of lectures. Today the same school will admit no one who has not had a college course as a foundation. Forty years ago the law schools of the land admitted any one who could show that he had the proper amount of money to pay the tuition required. Today the *head* of the would-be-attorney must be properly filled, as well as his *purse*, if he secures an entrance to his chosen field of labor.

Forty years ago just anybody could be a farmer. Strength of muscle, rather than strength of mind, was the test, if any test was required. Today, too many persons still have the idea that "just anybody" can farm. Too many yet think that if a man can do nothing else, he can farm; but he who tries it is very liable to reap a non-profit-making harvest.

In the pioneer days of this wonderfully fertile valley, the soil was more than ready to give a bountiful crop to any hand that held the plow. Today this same land is just as willing to pour into our barns and our bins an abundance of her products, but because of our abuse of her strength she can not do what she would.

I think I am safe in saying that it takes more brains to feed a pig than to sell chewing gum or chocolate carmels. To do the latter, a person must be able to tell a good nickle from other coins. A slot machine can do that; but a slot machine could not properly feed a pig. There is more in feeding a peg than the mere operation of throwing a few ears of corn over the fence.

In these days of department stores, when nearly all goods are done up in packages requiring little or no measurement, it takes very little knowledge to stand behind the counter and hand out the packages to the customers. The cashier at the desk must be able to make change rapidly and accurately, but the one handling the goods has little of that kind of work to do; and having but one kind of goods to handle, the prices can be readily learned and used. Such workers are not much more than machines. True, they are not the heads of the departments or the managers or owners of the store. Neither would these same workers be owners or successful managers of a farm. The day is fast approaching when every one will recognize that the farmer needs an education (not exactly the same kind, of course) just as broad and just as certain as that of his merchant or banker friend; aye, just as good as that of his family physician.

I never saw a field of wheat harvested by the old hand sickle; but I have read about it and have heard our grandfathers talk about it, and I can readily make a mental picture of such a scene. I can see each man gather the grain in his left hand and then cut it by the sickle held in the right hand. Such a process seems so slow to us in this day of progress that it makes us tired even to think of it. In the days when such a method of harvesting was used, some one was doing some thinking, and I imagine I heard him say to himself, why not arrange the fingers of the left hand above the sickle to catch the grain as it is cut and use both hands to swing the sickle? This thought took the material form of the very useful grain cradle which made it possible for one man to cut in one day as much wheat as several men did with the sickle, and do it better.

Then Cyrus H. McCormick must have said to himself, why not put the cradle in such a form that the horse could swing it, and let the man rake the grain into bundles and bind it into sheaves. Cyrus McCormick thought for twenty long years before his harvester went into the field for practical use. This harvester of sixty years ago with a man standing on the platform behind to take the grain into bundles, has been of incalculable value to the agricultural progress of this country and of the world. The next natural step in progress and development was to fasten the rake to the machine and let the strength of the horse cut the grain and place it in bundles ready to be tied. The machine rake then pushed the man from the platform of the harvester to make room for the arms and fingers of steel that gather the grain into bundles and that tie them with the twine as witnessed each year in the twine binders. At the north of us in the wheat fields that are almost boundless the development of the harvester has been carried still farther and the ripened grain, free of all straw and chaff, is hauled from the field in sacks, instead of in sheaves.

What has been said to show the marvelous development in the cutting of wheat might in like manner be said to show the equally wonderful strides in the improvement of other farm implements. From the hoe to the one-horse plow; from the single shovel to the double-row cultivator; from the wood moldboard to the gang-plow; from the old "A" harrow to the disc, we observe leaps in agricultural development and progress that charm our imagination and almost stagger our belief. And yet all has not been told.

What was the object of all this thought that has been worked out in our modern labor saving machines? Simply this: To make an increased production possible by making an increased acreage possible. The last half century has seen thousands and thousands of acres of wild land made tame and ready to yield their bountiful harvests to the magic touch of the pioneer and to the continuous labor of the permanent settlers. But we are aware that the day of increased acreage under the old plan of increase is about gone, so new and different ways must be devised to secure the increased production.

The problem now is not so much that of planting more acres, but rather that of making each acre yield a greater harvest than it is wont.

Land that has been considered too wet is made the best yielding piece on the whole farm by the proper placing and use of the drain tile; land in some regions that has formerly been unfruitful because of a lack of moisture is made to yield up its strength in crops most astonishing in quantity by the correct use of the irrigation ditch; land that has been worn out by the constant use of it, for a certain product, for a score of years or more will be able to increase its value by giving it the needed rest through the process of the rotation of crops. The mere mention of these points suggests that the farmer to come must have a knowledge different from that which is merely necessary to run a machine. What is the use of plowing two rows of corn if the plowing of one row, under proper conditions, will yield as many good ears in the time of gathering? No doubt new machines will be made for the work of the future, but we can surely see that much of the thought of the future will not be so much for the purpose of making machines to extend the crop area, and for the gathering of the harvest from a larger field, but rather to make better and greater production on fields of less size. The proper use and care of the soil, the kind and quality of the seed used, and the cultivation of the growing crop will receive such attention that the smaller field with really less labor will do for us what the *more acres* have been doing.

This wonderful development in labor-saving machines has not tended toward a better training of either man's physical or mental powers. We all agree that it requires some physical strength and some physical exercise to run most of the machinery used upon the farms today. However, it has always been one object of the inventor to make the machine as nearly automatic as possible, thus requiring as little attention and as little physical force on the part of the man as possible. "Any child can handle it," is an attractive feature and one much used in the advertisement of machines. I would not return to the former days of muscle-straining and back-breaking methods of work, just for the sake of securing more exercise for the body. Even the easiest work upon a farm gives enough physical exercise to satisfy nearly every one, I judge. While the use of machinery makes the labor of the farm less irksome, it does not make it more beneficial to the body. Some muscles may receive little exercise, while others are really overworked. This is not to be wondered at and perhaps can not be remedied very materially, as farm machinery is not intended to be, at the same time, gymnasium apparatus for the proper development of the human body. These statements are not made as arguments against machinery, but to show the truth of the assertion that machine work does not necessarily train the physical powers of man.

Likewise, the more automatic the device, the less thinking required on the part of the man running it. No machine will run of its own accord and the man who gets the best service from it is the man who has mental power enough to see the principle that controls its working. Such a man is greater than the machine, is able to think, and knows when every part is doing its best; he also knows how to remedy the trouble if everything is not doing its best. Many persons do not seem to be attracted by the running of a machine, and while they may be good thinkers in many lines they can not or do not do the thinking necessary to bring about a successful result with the machine. The tendency then is to get a machine that needs little attention and less thought. "You push the button" and the machine does the rest is the goal of labor-saving devices.

These things being true, we see that our shops, our homes, our barns, our fields, full of machinery, do not necessarily train man's mental powers. A few, however, have been trained by some means to see completely, to think logically, and to construct things accurately or we could not have these improvements. We call such persons men of genius, but Edison says, "genius is nothing but a capacity for hard work." Not all of us can be Edisons, but all can do some good thinking and get good results from it.

If you have read the Review of Reviews for December, you may have noticed the article on "Our National Prosperity," during the past ten years and especially during the last year. At no time in our history have we seen such abundant returns for our labors. In 1890, the value of all farm property was sixteen billion dollars; today, it is twenty-six and one-half billion dollars. In 1890, the value of farm products was two and one-half billion dollars; today, it is seven billion dollars. In 1890, the value of farm products per capita of all engaged in agricultural work, was $287; today, it is $600. The progress of the country in railroad development and earnings, and in manufactured products has been just as marked as in the agricultural line—and still we are not content.

I wish to give you one paragraph from the article mentioned: "Compare this striking exhibit of the prosperity which has come to the farmers of the country with the poverty of ten or fifteen years ago, and in doing so bear in mind that this is only the beginning of what we may expect in farm life. In passing through the pioneering period of skimming the cream of our most fertile soil we carried our farm production beyond what could be profitably consumed by this country or for which a profitable market could be found in Europe.

"Now, enormous industrial growth with its millions of consumers added to European requirements, has reversed the conditions.

"We have reached the time of improved methods in farming and of restoration of fertility to the soil. Much is heard about the increase of the fertilizer trade of the country—and the development of this industry has been commensurate with that of other large business interests, but the real improvement of farming is found more largely in better methods of handling the soil than in wider use of commercial means. Scientists are teaching farmers here and there, and from them others are learning how to rejuvenate and rebuild their land by the use of alfalfa, sowpeas, vetch, and other crops. They are learning how to diversify crops. The orchard, the truck garden, the dairy, are all yielding materially to swell these great totals of agricultural output and increase in farm values."

If I read the meaning of the above correctly, and if I am also permitted to cast a glance at the future problem of the farmer, I would say that he must give his attention to at least four phases of his education.

First—He must study to preserve the power of the soil.

Second—He must study to improve the quality of the production.

Third—He must study to increase the quantity of the production per acre.

Fourth—He must study to prevent losses caused by the ravages of the enemies of his crops—the insect enemies.

In the last point mentioned there is a problem that needs much thought and work. Largely increased values may be the result of such labor. Last year, in the state of Missouri, $12,000,000 were spent for the education of the children of the state, and in the same time the injurious insects destroyed at least $14,000,000 worth of its products.

A few years ago in Nebraska the chinch bug began to eat up the small grain crops of that state and ruin seemed inevitable. Prof. Bruner of the State University thought and worked and formed a way to rid the country of the pest by growing diseased bugs and turning them loose in any field where the chinch bugs were at work. Soon all the bugs of the field were inoculated and destroyed by the disease. The diseased bugs were sent by mail from the laboratory of Mr. Bruner to any farmer needing them, and his fields were soon rid of the enemy. No one could estimate the value of such thought, but perhaps it was enough to pay many times over Prof. Bruner's salary at the university for as many years as his life would permit him to work. A year or two later he was given $10,000 for one year of labor in South America on a similar problem. Does it pay to be able to think and work?

Having indicated along what lines the thought of the plowman should be trained, the next question is, how and when should such an education be obtained? Some one will answer by saying, go to our agricultural colleges. These schools are established for the purpose of helping in such problems and they are doing a grand work for all students who attend. But these colleges are not sufficient, the work should begin earlier in the life of the student so that a proper foundation may be made by the time he enters the college.

Not every boy who is born and reared upon a farm is fit to be a farmer. Some of them are to be our best lawyers, some physicians, some business men, some ministers. On the other hand is it not true that some boys born and reared in our cities and towns are really designed to make the best of farmers if their eductional training could be of the kind to help them to discover their real work in life? Very few boys and girls have any definite idea about their future calling before the ages of 17 or 18 years, hence it is not the part of wisdom and economy to attempt to fit the boys in the public schools for any particular calling. Some high schools have tried the experiment of organizing a commercial course, only to find, after the novelty of the idea wore away, that the number enrolling for such work was not as great as anticipated. In some instances the attendance, though large at first, decreased until it became so small that the course was abandoned after a trial of two or three years.

The causes of such a result may have been many, but possibly part of the trouble was due to the fact that few of those entering had any idea of what they really wanted to do and part due to the idea controlling the organization of the work. No common school or high school can be a trade school, but all common schools and all high schools can lay a foundation on which may rest the education for any trade or calling.

Our schools should do three things for the pupils

First—They should teach them to gather facts; that is, give them the power of acquisition.

Second—They should teach the pupils to classify facts; that is, direct them in their powers of assimilation.

Third—They should teach them to tell what they know of facts; that is, help them to a clear and correct form of expression. Acquisition, assimilation, expression are the three fundamentals of education. In developing these three powers in pupils two things are of marked importance, viz., observation and thinking. This means a great deal and is often complicated in process. Pupils must learn to see things about them and to see them just as they are. After such seeing they may learn to do some thinking. Too often our teaching is nothing more than naming words—no seeing, no thinking. Our course of study for the common schools is full of branches for study with the result that much of the work is done by book only. The subject is not taught as it touches the life of the pupil, but simply by the words of the book, therefore is mere words. For instance, a teacher may hear a recitation in physiology and talk about joints, but during the whole course may not study one real joint, when almost any day several specimens of joints in bones might be brought from the homes of the pupils—no seeing, no thinking.

.The things we study about are all around us if we were only taught to look for them. This is especially true in the rural districts. Then why not see them? Perhaps some one will say our common schools should stick to the three R's. Granted, but when we read we read of these things about us. Then why not see them so that we may understand the words we read? When we write or talk we can write or talk of some of the things we see. When we count we may count things we see and thus have our number work directly in touch with our life. Such teaching would mean the elements of agriculture, or nature study, or any other name you wish to apply to the things seen, used as a part of the three R's—it would put life into the three R's. Then if the boy becomes a doctor or a farmer he has formed the habit of seeing things—his foundation is well started.

We have some excellent teaching in this direction now, and in the near future we will have more of it, not because a state law requires it, but because the progress of the pupil demands it. Teaching done simply to satisfy a law is usually done along the line of least resistance and is bookish. The trained teacher who is conscientious will do things better than the law demands. The number of such trained teachers is slowly increasing and would more rapidly increase if their pay was commensurate with the progress and prices in other lines of work.

Some reading lessons, some language lessons and some arithmetic lessons often are lessons about seeds and their germinations; some about soil and water; some about rain and snow; some about animals and plants; and some about birds and butterflies. Such lessons properly conducted are parts of a foundation good for the future in any walk of life. Call it nature study if you like, but it is nature study from the standpoint of the boy and not from the standpoint of the scientist. Would not such work be of great benefit and be the proper foundation for the boy who is the farmer to be?

But all our thoughts savor of money getting. What is the education that will help us to make more money seems to be the ruling idea. Is there nothing in addition to the dollar that is worth while? Few of us are scientists and do not see things with the scientist's eye, but do we see anything of value in what we look at except as we see dollars growing on it or out of it? Do we see anything of value or worth in a beautiful sunset or in a bunch of violets by the roadside? Perhaps a field of corn means more to us. Why. Can the farmer see more in a row of corn than the money it will bring? Does he see more? Should he see more?

In the earlier days farm life gave considerable training of the hand, but at present the machine deprives the boy's hand of its proper training. The schools must help the boy out in this, and they are so doing, by what we please to term manual training. With a training of the eye and hand in a common sense way to help express thought, the farmer to be enters upon his agricultural course at the college with a foundation upon which a superstructure of great service and value may be erected without hinderance or delay.

Not all the farmers to be will be able to secure the college training, you say. True, but I would that they could. The agricultural college recognizes this condition and through its experiment station and the county experiment stations and the short courses and the local corn judging schools it is becoming most helpful to the would be farmers, and the real farmers who are not really educated for their work. All such arrangements bring the work to the people and make it possible for them to take advantage of valuable instruction which many could not or would not otherwise obtain. Do the farmers realize what is set at their very doors? 'Tis hard for those who have fixed habits to change their ways and they pay too little attention and give too little study to the problems they have to solve. The young men who are to be the successful and progressive farmers of the future must and will (if not at once, in time), take advantage of all these means of education and prepare themselves to take care of their farms in a better way, with no more labor, and reap better returns.

Some may not see the value of the experiment station—both state and county—and think the money spent to sustain them a waste. It does not seem to me that such persons have the right view of the matter. No farmer can depart very far from the usual plan of doing things, because he does not have time enough to try many experiments and because he dare not risk his crop too much to untried ways. The experiment station can help out in this, because its prime object is not to raise a crop, but really to get the real result from a certain plan or method that may appear to the mind to be what is wanted. A failure at the experiment station may prove to be a great blessing to the farmers of an entire county or state. Again, the bank account of the farmer is not seriously affected by a failure at the experiment station, but it would be if the same failure occurred on his farm. Oftentimes we need to know two things; first, what to do; second, what not to do. These experiment stations can teach us both of these things at a much less cost than to learn them by experience. "Experience is a dear school." The station close by ought to be of the greatest interest and value to the farmers if they get out of it what they could.

Often we lose the value of an article because we do not use it. Is it so with all these means of education which are being placed before the farmers?

From all these means, "sub-schools" and "short courses," etc., the farmers may learn to know the soil of his farm and its strength and possibilities; he may learn to know good seed and how to care for it and how to plant it; he may learn to improve the quality of the product; he may learn to secure a greater quantity of the product; and he may learn to keep his insect enemy from making valueless his labor. In short, he may learn to be the farmer he should be.

If your boy is to be a physician he will have to be educated for the work; if he is to be a lawyer, he will have to know the law; if he is to be a skilled mechanic, he must train his hands as well as his head; if he is to be a minister of the gospel he must know his Bible and know how to teach its truth to others; if he is to be a farmer he must know his farm and must know how to use it—he must be educated.

HOW I CAME TO GO TO COLLEGE AT SIXTY.

By Asa Turner, President Iowa Corn Growers' Association.

The little woman that keeps step with me in life once came to me and said, "Husband, mine, you know what you say to me when I am cross." "Who said anything to you about being cross?" "Well, nobody, only I am sometimes, and then you say I am tired and have been working too hard and I'd better get on the cars and run down and see mother." Now, I don't want to intimate that you have been cross, but with the hogs all dying with the cholera this year and the oat crop falling down and the men going on a strike in haying, I know you have been a good deal worried and didn't I hear you say you would like to go to the International Stock show at Chicago?"

"Well, so your recipe for a worried man is to send him down to the International Stock show at Chicago. Now, Dr. Turner, I think I will take that prescription."

I went and drew up side of the show ring where they were inspecting horses and with other chance acquaintances watched the show, but being in this worried state of mind and having lots of things I wanted to see, I became out of patience with their dilatory method of placing the ribbon. They would have the horses trot off a ways, then judges would stand and look at them, then get their heads together and look solemn and wise as though they really knew something; then they would have them trot off sideways; there would be more watching, some solemn conferences and more looking wise again. I got out of patience with this and exclaimed: "Why in time can't they get to work and put the ribbon on those horses! Anybody can see with half an eye that the gray colt is the best horse." Of course there was an Irishman there and he called me down by saying, "Mister, do you know the pints of a good horse?" I told him "pints or no pints," I have been giving them away to get rid of them, and if he would tell me where Johnson was with the college shorthorn herd I would go and see him; cattle were the stuff; they were the money makers, and I made up my mind right then and there I would know the "pints" of a good horse and went my way to return home.

I astonished my wife one day as I was reading Prof. Curtiss' prospectus for a short course in live stock judging at Ames, by saying: "Wife, I am going to college." This surprised her so that she gave one of her old-fashioned girlish whistles. "What put that looney idea into your head?" she said. "The boys will haze you up there." I said to her, I would get along with the boys all right.

I went down, of course, took the instruction under Profs. Curtiss, Kennedy and Craig, and, thanks to them, I now know the "pints" of a good horse. I went back a year later and one evening while we were waiting for supper one of the students broke out after this manner, "Say, fellows, did you hear the corn crank from Illinois yet?" The other replied, "You ought to hear him; he is great." I thought it about time for me to make inquiry, so I asked if he could talk ten minutes on corn without running out. He replied, "He can talk a week and tell you something new every day." This aroused my curiosity and I went down the next morning to investigate. I found him there with his class with samples of corn and a tape line studying it. He invited me to join the class. I replied to him that I was just reconnoitering around and that I was too old. I looked him over, a little man, from head to foot, and wondered what he could tell me about raising corn after I had raised thirty crops on one farm, enough to pay for 520 acres of land in one body. He was persistent and courteous and in order to bluff him off I told him if he would get me a seat I would try. He gave me a seat, set down beside the corn, and strange to say, the room got warm and I began to sweat and what I knew about corn began to ooze out of the pores and my admiration for the dapper Prof. Holden began to rise, and has been rising ever since.

I no longer see things in the same light. Life on the farm is full and interesting every day. It is no longer a dreary round of following the furrows. As we ride across the field with the fine implements the implement makers give us now and watch the plows pear off the furrow we not only see the soil prepared for the first stage of the preparation of the soil for the plant, but we can see the Creator's process, the beginning of the process of preparing plant food for the plant's use.

The Iowa Agricultural College Short Course has been a boon to Iowa farmers and together here the man of 60 and the boy of 16, side by side, are studying the laws that govern animal and plant life and see through them the great Creator who gave it all to us.

THE FUTURE POSSIBILITY OF IOWA AS A CORN GROWING STATE

W. S. Kelley, Mondamin, Iowa, Before Harrison County Farmers' Institute.

"Aye the corn, the golden hearted corn, that hath within its heart a health and strength for all."

In any subject wherein we deal in the future it must of necessity be largely speculative. It was not given to man to peep into the future; the door is locked and sealed; and "no admittance" is written thereon. But by reasoning from the known to the unknown we may often arrive at conclusions which for all practical purposes are true and will come. With this subject, the dreamer could unbind the chains that holds him to earth and soar away amid ethereal blue, far, far above the maddening crowd. With imagination hitched to a star unleashed from the practical, the real and the ifs that abound on every farm, Iowa's corn could feed the world. That there has been an awakening in recent years in the growing of corn all will admit and much good has been accomplished. That the field has been but partially explored—tunneled along the edges, as it were—is also a fact.

Beginning with the year 1896 and going forward to 1905, inclusive, the average yield of corn per acre in Iowa has been as follows: 39, 29, 35, 31, 38, 25, 32, 28, 32.6, 34.8, making an average of 32.44 bushels for the past decade. There are in round numbers 3,400 hills on an acre when we use a three-foot six-inch planter. Now, if we raise a single stock of corn in every hill that will produce an ear weighing ten and two-third ounces, we have the average yield for Iowa. If we grow two stalks to the hill and each produces an ear that size, we will raise our average from 32½ to 65 bushels per acre. Again, with our two stalks, if one produces an ear weighing ten and two-thirds ounces and the other a little nubbin weighing five and one-half ounces, we have forty-nine bushels per acre; and this makes just one pound of corn for each hill. It looks easy; why have we not succeeded in doing it?

In the growing of a crop of corn the first essential is a good seed bed. Too much stress can not be laid on this point. If the seed bed is not thoroughly prepared a good stand equally distributed in the row or hill is a practical impossibility. My own experience as well as observation leads me to believe that a uniform depth of four and one-half inches for spring plowing and five and one-half for fall plowing gives better results than any shallower or deeper work.

At the time of planting the disk if properly set will thoroughly pulverize either of the above plowings to the full depth of the furrow, slice and compact the soil firmly at that point, thus cutting off evaporation of moisture, so sorely needed later on.

While not coming properly under the head of seed bed preparation, yet closely allied to it, a better place will not be found for introducing the cut-worm. After the farmer has done all he can in the way of selecting and testing his seed-corn, there is no element that works to the destruction of a stand like the cut-worm. And after all there is no enemy of the corn crop so easily destroyed. If ten days or two weeks before the corn is ready to plant the ground is thoroughly disked and all vegetation killed, the cut-worm will starve to death before the corn is up. During the past season the spring was so wet I could not get on the ground until it was time to plant corn, so I didn't wait to kill the cut-worms. But I went back in about two weeks and planted that field over again.

A marked improvement in yield will come about in the way of seed selection. There has been a noticeable stride forward during the past two years, but the limit has not been reached. Indeed, the field has been scarcely touched. There is a wide difference of opinion as to what constitutes a good seed ear. Many of us have that to learn and it will be a long lesson before we get the problem solved. And right here one branch of this problem diverges into a field wholly unexplored, but which I believe to be pregnant with great results. If two ears of corn of the same variety and looking as much ailke as two ears ever do are planted side by side, one often shows a yield of eighty to ninety bushels per acre, while the other will yield but forty to fifty. No amount of inspection would have told which ear was the better yielder. Nothing but actual planting could have told.

If the heavier yielding ear is put through the same test, year after year, for a decade, great results in yield will certainly follow.

The field is open and fertile; the interests of the farmer beckon onward. I hope that many farmers will take up this line of work.

I am a firm believer in the use of the testing-box. No matter how well the seed has been matured or how carefully preserved thereafter, the testing-box will disclose the ear that produces the weak and spindling sprout, as no other method will do. This spindling stalk, which, like Richard the III.—

> "Cheated of feature by dissembling nature,
> Deformed, unfinished, sent into this
> Breathing world scarce half made up."

continues all through the season in that same spindling way and in the end produces nothing, or at best, a very small ear, while the strong, sturdy, vigorous sprout continues so throughout the season, and at husking time greets you with a bumper ear. No amount of inspection would have detected the latent virtue of this ear, nor the apparent lack of it in the other. But the testing-box does no guessing.

The method and depth of planting has little to do with yield, only in so far as it affects the stand. And this brings up another question which is yet unanswered—what constitutes a good stand? All will admit that every hill should be represented, but as to the number of stalks we can not agree, or at least do not agree. The Agricultural College, I believe, advocates three and one-third or one hundred grains for every thirty drops of the planter. Some excellent writers say three grains are enough. My own observation, as well as experience, leads me to believe that three is certainly the maximum. Two and one-half to two and two-thirds is better if the tester-box has been used so every grain will send up a strong, vigorous sprout.

We suffer not nearly so much from lack of stand as we do from unequal distribution of the same. Let me illustrate: I counted the stalks in one hundred hills in a field this fall and this is what I found. Ten hills, no stalks; nine hills, one stalk; thirteen, two stalks; twelve, three stalks; twenty-seven, four stalks; twelve, five stalks; eleven, six stalks, and six had seven stalks, a total of 345 stalks, or an average of almost three and one-half per hill. And yet the distribution was such that one stalk to the hill would have produced more corn. In drilled corn one stalk every fourteen or fifteen inches will give better results than any thicker or thinner planting. A better distribution of stand and consequently an increase in yield will come about through the more general use of the modern edge drop planter. The edge drop planter will count the grains and drop them correctly ninety times in one hundred, while the old-fashioned round hole plate will guess at and drop correctly about seventy times in one hundred.

In the matter of cultivation we have by no means reached the highest limit; indeed, we have not yet left the kindergarten class. I assume no superior knowledge in this line, but after a careful study of the corn plant as it appears both above and below the ground I have adopted the surface shovel or "surface wings," as they are sometimes called, as being the best implement obtainable at this time for the purpose of cleaning the ground of weeds and mulching the surface. These are the two main objects in corn culture. Do not confound the surface shovels with the surface knives. I have not tried the knives, but from observation I do not like their work so well.

I believe the variety of corn grown affects the yield more than people are willing to concede. The standard varieties, I believe, are Boone County White, Leaming and Reid's Yellow Dent. Several years ago I brought the latter variety direct from Illinois and planted it side by side with seed selected from my own cribs, a mongrel variety that I had been trying for several years to breed up. Planted under the same circumstances and at the same time, it out-yielded the mongrel bred corn twenty bushels per acre. Since then I have planted no other variety and nothing looks like corn to me but Reid's Yellow Dent.

Indeed, to touch up the various phases and divergent incidentals which go to make up the possibilities of Iowa as a corn-producing state would require days instead of the minutes allowed me. I shall not attempt it, but will summarize a little and then pass on to the probabilities.

I believe an increase per acre can be brought about in about the following percentages:

In better preparation of seed bed	15 per cent
Better selection of seed	20 per cent
Propagation from prolific ears	20 per cent
More general use of the testing-box	25 per cent
A better distribution of stand	20 per cent
Better cultivation	20 per cent
Variety of corn	10 per cent
All other causes	20 per cent

This makes 150 per cent, and 150 per cent of 32.5 added to 32.5 gives us a little over eighty bushels per acre. This, I believe, entirely possible on Iowa soil in favorable years. Owing to various reasons I do not look for the average yield to go above fifty bushels in the next ten years. The number of acres devoted to corn in this state the present year, as given by the United States Department of Agriculture, is 8,767,597, and by the state department at about 9,000,000. This, I believe, to be the highest acreage that will ever be devoted to corn in Iowa. Indeed, I look for the corn area of the state to fall to about 8,000,000 acres and remain there permanently. The farmers are beginning to learn that they can not grow corn on the same land year after year at a profit. Nature has called a halt and called in no uncertain tones. And he who will not now must in the end heed that cry.

It would seem when the God of Nature created the corn belt he had in mind selfish man, who was afterward to invade that fertile plain and grow this king of all the cereals.

Corn is a gross feeder and derives its sustenance entirely from the soil. Man's greed would induce him to grow corn continuously and thus exhaust the fertility of this great soil, if nature did not call a halt. But a plague of insects like unto those sent among the Egyptians of old has been cast among us and much as we would like to grow corn in our own way and on what field we saw fit, the insects cry halt, and I believe they are here to stay.

The latest enemy to invade the corn field, with a full determination to diminish the yield, is the old-fashioned grub worm. This year, for the first time, he appeared in great numbers on my own farm and did material damage to the corn growing on clover sod—I think fully twenty bushels per acre. Is he here to stay or was this an accidental visit? I don't know, but I have a grave fear we shall meet him again. The corn root *aphis* or louse is here and in many parts of the state is doing material damage. The first generation of this insect, which hatches early in April, is absolutely helpless and is cared for by a medium-sized red ant. It is carried to the roots of the corn, where it feeds to the great injury of the plant. This insect seems to thrive best during a series of dry years. It almost wholly disappears during a wet season. During 1899, 1900 and 1901 I think fully 5 per cent of the hills on my farm were affected. But since that time their damage has been very slight.

The most destructive of all the bugs or insects which infest the corn fields and one which is doing more to lessen the acreage devoted to corn in this state than all the other things is the beetle which produces the corn root worm. This bug may be found by the thousands in any corn field in the state, or in the United States, so far as that is concerned. It makes its appearance about the time the corn comes in silk and may be found about the silks until they are completely dead, or until about the 10th of September. This bug lays its egg in the ground, where it remains until late the following June or early July, when the egg is hatched and the larva, or corn rot worm, as we call it, makes its way to the root of the corn plant and begins its work of destruction by eating away the outer layer or that thick, soft covering of the root, which soon decays at that point. Indeed, in perhaps half the instances the root proper is eaten off. By the ravages of this worm the yield is cut in two, sometimes in three, and any little gust of wind will put the stalks flat to the ground. I exhibit the bugs, the larva or worm, also a stalk of corn with every root eaten off and a stalk showing the natural root system. These two stalks say more than I could write in a week.

The stalk with the root eaten off was on ground grown to corn continuously for five years. The stalk showing full root system was grown on fall plowing, but on ground that had been in corn for four consecutive years and was badly infested with worms until it was sown to oats in 1905. This worm lives entirely on the roots of corn, kaffer corn, or sorghum. This is the official life history, but I am going to add from my own observation the roots of cucumber, squash, mellon and pumpkin, as the bug is invariably found on the blossoms of these vines. Be that as it may, certain it is that if the land is seeded to small grain it will completely rid the ground of the worms, until it is again infested. This worm cries in tones both clear and loud, "Rotate, rotate, rotate." If there are those who believe this beetle is only a local trouble and his visit but temporary I ask them to disabuse their minds on that point. On a recent trip to the Pacific coast I saw the bugs among the great corn fields of Nebraska and on the little flint corn along the legendary Platte in Colorado; I saw them among the melon vines at Green River, Utah, and on the little patches of sweet corn amid the sage brush of Nevada; I saw them among the squash vines on the islands of the Sacramento river and on the little plats of corn in that great San Joaquin valley in California. On a hunting trip in that state, some forty miles from the nearest habitation, I visited a goat ranch where Angora goats are grown for mutton, and at a spring in a little garden of perhaps a quarter of an acre were a few hills of sweet corn, what was my surprise to find the roots of the corn almost entirely eaten away. In conversation with the owner he told me that in that particular corner of the garden (it was on a mountain side) the afternoon sun beamed in and it had been his custom for a number of years to plant to early vegetables and then later on in June or July to plant to sweet-corn. So that accounted for the presence of the worms. On my return home I saw the effects of this worm on the corn in Texas within a few miles of the borders of Old Mexico. I saw where they had worked on the kaffer corn in New Mexico and Oklahoma and on the flattened fields in Kansas and Missouri, all testifying to his universal presence.

BEES, CULTURE AND DO THEY PAY.

A. L. Hyzer, Before Buena Vista County Farmers' Institute.

The bee from its singular instincts, its activity, its industry, and its useful products resulting from its labors, has from the remotest times attracted general attention and interest. No nation upon earth has had so many historians as this remarkable class of insects.

The patience and sagacity of the naturalist have had an ample field for exercise in the study of the structure, physiology and domestic economy of bees. Their preservation and increase have been subjects of assiduous care to the agriculturist, and their reputed perfection of policy and government have long been the theme of admiration and have supplied copious materials for argument and allusion to the poet and the moralist in every stage.

A very great number of authors have written express treatises on bees, periodical works have been published relating exclusively to their management and economy, and learned societies have been established for the sole purpose of conducting researches on this subject.

The history of the opinion of successive writers sufficiently prove how gradual and slow has been the growth of an accurate knowledge of these insects, what is now known being the result of persevering labors of ages.

The accumulations of curious and interesting facts, indeed, which has accrued from the researches of such apiarians as Miller and Root of modern times, Langstroth of less modern, Huber and Von Seibold of ancient times, who are considered among the greatest bee scientists of the world.

Bees stand in organization and intelligence and in social and constructive ability at the head of the whole insect tribe; they abound in all parts of the world, but are more numerous in warmer latitudes. About 5,000 species are known to exist. They exert a most important influence upon the vegetable world by their service in the cross polinization of plants, some of which now depend wholly upon their co-operation for their existence. Many of us understand the advantage we receive, by keeping a few colonies of bees in easy range of our orchards. And they furnish us with the important food honey, some species being semi-domesticated for the purpose of making it in large and manageable quantities for man's benefit. Our description will therefore apply more especially to the common or well known specie, the honey-bee, which is the one particularly prized on account of the rich product it affords. The honey-bees begin their search for honey with the opening of the first blossom in the spring and do not cease it until the withering of the last blossom in the fall compels the insect to go into winter quarters. It is their habit to devote their researches to a single sort of flower as long as it serves their purpose, each individual searching after blossoms of the same kind instead of searching flowers discriminately and to this habit is due the great service they accomplish in cross fertilization. The honey-bee is supposed to be of Asiatic origin and was found at the eastern end of the Mediterranean sea in a partially domesticated state at the early dawn of history, and the bee keepers of Egypt, Syria and Greece practiced many of the arts used at the present time.

Bee keeping traveled into Europe with the Roman civilization and came to America with the early colonies. Several races have been developed in the course of this long history of semi-domestication and the best of them have long ago reached the United States.

Bee keeping is not only a source of pleasure, but is interesting and profitable as well, and we find that a great many people are drawing a large income from this source every season.

The instinct and social economy of the honey-bee, having been studied with great attention both in ancient and modern times, and discoveries that which perhaps nature presents nothing more interesting and wonderful, have rewarded the patient observer. Apiarian societies have been formed, books and papers have been published for the purpose of prosecuting this single branch of natural history and for promoting apricultive or the economical keeping of bees, and to these largely we owe our knowledge of the culture of bees.

I do not think it necessary to enter largely into the subject of apriculture or the management of bees in this paper for the want of space and for the reason that but few people in this community are interested in the culture of bees or have any desire to engage in bee keeping. I will only give a short explanation of the modern, human and scientific system of bee keeping, which today supersedes the ignorance and cruelty of past ages and give a few of the best points to new beginners in getting properly started.

I do not advise anyone without experience to start with more than two or three colonies, for it might be all that would be of any profit to them. They can be moved at any time of the year except in very cold weather. Select a location which is high and dry, that is a place partially shaded by trees during the heated part of the summer, place the hives to the south or east upon stands four or six inches high; see that they are level crosswise and a little lower in front to keep out the water and be particular to choose a place well protected from hgih winds, as it is very essential in this community. In taking them from their winter quarters select a warm, still day after the snow has all gone, about the first of April. Have yourself provided with an extra bottom board which has been placed at some convenient place near the summer stands and immediately after taking them out remove the bottom board and place the hive upon the one which you have provided. The hive is then ready to be placed with the new bottom board on the summer stand, which should be done at once and the bees liberated. Thoroughly scrape off all the dead bees and dirt from the bottom board which has been in use and use it in like turn with the next swarm placed upon the summer stand. The work of moving bees should be done very carefully and precaution should be taken not to jar them or get them excited. You should be provided with a good veil and gloves and have them well adjusted at all times during the different processes of handling, for one never knows at what time they may attack him. After the bees have been placed on the summer stands careful observation is perhaps all they will need for a month or two. Should they begin to rob, close up the entrance to the hive which has been attacked, allowing only space enough for a single bee to pass in and out. As the first blossoms put in an appearance, watch your bees and if they are carrying pollen, it is a safe sign that they have a prolific queen. If you find them queenless you must immediately supply them with another or join them to a colony having a queen, the latter being advisable to the new beginner. If they are found to be short of stores it will be necessary to feed them either honey or sugar and water in the form of a thick syrup. If you are not capable of judging the proper time to put on supers, you had better put them on quite early, about the first of May, before the swarming season commences, which is about the first of May and extends to the 15th of July, and is usually a very busy time, especially if the manager has a number of swarms to look after and one in which the whole family becomes greatly interested in, and more especially if the more ancient modes of handling bees is practiced. At that time you would probably have heard the rattle of the dish pans, the ringing of the dinner bell and all the available ways of making a loud noise brought into use, even to the parting salute of the old family protecting shotgun and finally the bees have been compelled to light in the top of a tree, and a great task must be performed if they are secured and safely housed. But we are thankful that these old notional ways have passed away, especially with those who have become better skilled in bee culture. When swarming time commences have your empty hives all ready for receiving the new swarms supplied with starters or full foundation sheets and stand in a cool, clean place. If artificial swarming is desired this is the proper time to do it. If transferring is necessary this is also a good time or can be done a little earlier. If beginners allow their bees to swarm naturally they are most likely to meet with good success. When the swarm comes out the bees will usually settle on some suitable object near by. It is not necessary to beat on pans or create a loud noise to make them settle. Watch them closely and follow them up, usually they do not go far. After the bees have clustered in a compact bunch hive them either by shaking them on top of the brood frames or on top of the hives. This is usually done by cutting off the limb with the bees attached and carrying to the hives, or if out of reach and not suitable to cut the limb, use the swarm catcher, which answers the purpose. After they have adopted their new quarters, place the hive in its permanent position and shade for a few days. While bees in the act of swarming are not much inclined to sting, there is once in a while a swarm that is very aggressive, and do not forget to have your veil and smoker in readiness. I think it advisable for new beginners to allow their bees to proceed in the most natural way possible. Of course it is essential to have your bees in good, improved, controlable hives and assist them in building their comb straight by placing full sheets of foundation or artificial comb in the brood frames, well rowed in. After you have built up an apiary of ten or twelve hives try your hand at artificial swarming, for which there are a number of ways and the entire prevention of swarming.

After the swarming season is over the bee keeper's time is occupied in getting supers in readiness and in taking care of the surplus honey that is either in the comb state in the form of sections or in the extracted product.

When the first super you have given to a colony is about three-fourths filled put another one underneath it. By the time this second super is three-fourths finished the top one will usually be full. If not put on a third super below these two. As soon as every section in a section is completely capped over it should be removed from the hive. Be particular to place the second super on before the bees have completed the first and do not take the super off until they have established themselves in the second. To prevent having a lot of unfinished sections at the close of the season you should, during the first few weeks of the honey flow, gradually reduce the number of supers on the hives to one each, and finally have only a super on the very strongest and best working colonies.

Store your honey in a warm, dry place free from dust. Put only section with nice straight, well filled and well capped comb on the market.

Scrape off all traces of bee glue; grade your honey carefully and put up in neat, clean shipping cases. Make sure that the front row is a fair representation of the contents of the case, if you are marketing it.

Wintering Bees—This is undoubtedly the most important part in bee culture and can describe it best by relating some of my experiences. During the last five years I have had from fifty to 100 colonies to care for and have experimented on several methods of wintering them. In the fall of 1902 and 1903 I placed all of my bees in an outdoor cellar, or cave, as we commonly call them. Some of them were late swarms and their stores were short. They came out in the spring in fairly good condition, losing only one or two colonies, but the weaker ones had to be fed as soon as I took them out. In the fall of 1904 I only placed part of them in the cave and put the rest in the cellar. The ones I wintered in the cave came through in good condition, did not lose any, while those I wintered in the cellar, a few colonies died, but I was fairly well satisfied with the result. In the fall of 1905, having more colonies than my cave would accommodate, I selected nineteen of the heaviest colonies and tried to winter them out of doors by banking them in. Out of these nineteen but one survived the winter, and of the seventy-nine which I wintered in the cave I lost only two. Last fall I placed all of my colonies of bees under ground and they seem to be doing well. A few years ago it seemed a very difficult task to winter bees. Most people were trying to winter their bees out of doors and generally meeting with poor success, but by the underground method it can be successfully and economically done. Place your bees in their winter quarters at the freezing up of the ground in the fall and keep them in total darkness. Give them plenty of ventilation and they will do the rest. Do not be afraid that vegetables in the same apartment is going to harm them. I use my bees to keep my vegetables from freezing, as they will keep the temperature in the cellar or cave at from 40 to 45 degrees, just the right temperature to sprout your potatoes and onions. They usually become very restless in their winter quarters about the first of March, when the cellar becomes much warmer, and you will find that some of the colonies have commenced to hatch their summer bees. Give them ventilation and be careful about admitting light. Keep them as quiet as possible until April 1st, and then if the weather permits, place them upon their summer stands as I have before described.

Now, a few words as to do they pay. It has been said that a county rich in the product of corn is poor in the product of honey, but they do pay fairly well in this community, not so well perhaps as they do in the heather covered districts of Britain and Russia, or the flowery regions of the Nile, or the alfalfa growing communities of our western states. But since the appearance of the dandelion and white clover and the more extensive cultivation of fruit it can be said that they pay fairly well and it is advisable for every farmer in every farming community to keep a few colonies of bees for the assistance they render him in fruit growing, if nothing else. And if he has not time to care for them let the children look after them. We often find that the lady of the house is more capable in caring for them. Some of our best bee culturers are ladies. Get them for the boys upon the farm; they will take great interest in them and in no distant day you will find your table provided with every luxury and no small income.

CORN CULTURE.

D. L. Pascal, DeWitt, Iowa, Before Johnson County Farmers' Institute.

HOW TO PLANT, TEND AND HARVEST IOWA'S GREATEST CROP. HOW TO CARE FOR SEED AND HOW TO TEST IT.

We listen to the dairy men tell how important the dairy products are, and the live stock men will tell about the cattle, pigs and sheep and their valuation; then the poultry men will tell you about the old hen and her eggs, which all sounds good and are important products, but let the Iowa corn crop fail, where would the stock man be? The cattle and hogs would be a drag on the market.

I am often asked how I became interested in the study of corn breeding. It was in December, 1901, while at the International Stock Show in Chicago, that I met O. D. Center of Champaign, Illinois, who had charge of a corn exhibit for the Illinois Experiment Station. He asked me if I was interested in corn growing. I told him "a little." After talking a while to him he asked me to attend a meeting of the delegates from the different agricultural colleges, to be held at the Stock Exchange building that evening; that he had a paper to read on corn breeding. I attended the meeting. The next day I spent part of my time at the corn exhibit with the young man.

After I returned home I sent to James L. Reid of Delavan, Illinois, for some pure bred Reid's seed corn and began the work of corn breeding. To the average man the term "corn breeding" means nothing, so I will not dwell long on that part of the work. I am endeavoring to breed a uniform ear of corn with shape, straightness of row, well covered tips and well filled butts. Not a large ear, but an ear ten inches long, seven and one-half inches in circumference at the butt and tapering slightly towards the tip, with twenty rows and an ear that will mature in this locality. I want to eliminate the weak and barren stalks and have every stalk producing something. If we plant our corn three feet and six inches each way we would have three thousand five hundred and fifty-six hills per acre, and if every hill produced two pounds of corn we would have a yield of one hundred bushels of corn per acre.

Some will say they don't see why a corn breeder tries to have the ears filled so well at the butt and the tip. Do you know if we can grow two ears to each hill, and then get fifteen extra kernels on the tip and the same on the butt of each year, we will increase our yield of corn three and one-third bushels of shelled corn per acre, which is profit? So these little things amount to dollars and cents to the corn grower, depending on the price of corn.

Farmers, do not discard your old variety of seed-corn until you are sure that it is not the best corn for you to plant, but make a variety test; buy some seed-corn of one of the improved varieties and plant in the following way; have the ground well prepared and as nearly the same as possible. Plant four rows of your old variety of corn and then four rows of the new variety of corn. Repeat this at least four times. In that way the conditions of the soil and the cultivation would be about the same. Then when you harvest the crop in the fall you can count the stalks in the rows and see which variety gave you the best results. Then you will know which variety is best suited for your purpose.

Remember, there will be no good seed in this field, as the two varieties will be mixed, but you will have seen which variety gave you the best results, then you can get some pure seed of that variety to plant your next year's crop. This trial may mean much to you at the end of five years.

A word on corn shows: They are of value for the educational part; there is nothing like comparing your goods with the other fellow's. You soon can see where your corn is weak and what the corn men are trying to produce. Don't be misled by the score-card; it is a guide to study by. Two samples of corn can score the same, yet one is a better sample than the other to plant.

Selecting the variety of seed-corn to plant will depend on what you do with the crop after it is harvested. If you feed it on the farm or sell it to the elevator man or feeder shelled, then you want to grow the variety that will give you the most bushels of marketable shelled corn per acre; but if you are selling it unshelled, that is, in the ear, then you want to grow the variety that will give you the greatest number of marketable pounds of cob and corn together per acre. You are after growing the corn that will make you the most money.

In selecting an ear of corn for seed there are several things to consider and you must not lay too much stress on one point, but study the ear as to its usefulness. The four main points to consider are: Will it grow? Will it mature? Has it producing power, and will it reproduce itself? If an ear will not grow it is of no value for seed-corn, no matter how nice it is in shape, etc. If it does grow and will not mature it is of little value. You all know what immature corn means, it is of poor feeding value and hard to keep when stored in the cribs. As to producing power, we want to know that it will do something when planted, in spite of unfavorable conditions. A large germ is a good indication, but the only safe way is to put it to the test in the germination box and see if it will germinate strong. In reproducing power we want the corn to show breeding and be free from mixture, so when it is planted we can expect to harvest the same kind of corn as we planted. The trouble with planting mixed corn is that it reverts back; too wide a range in tasseling out; barren stalks, matures uneven and is poor for next year's seed.

Sort your seed-corn carefully and test every ear. You can test four or six kernels from each ear, six would be best, and only save the ears for planting from which the six kernels grew strong. This testing can be done in the spring before corn planting time, say March or April, when there is not much other work that you can do. It means better seed, a better stand, fewer weak stalks, less barren stalks, more corn and more profit. Planting in the missing hills in a corn field by hand is just that much time wasted, as it doesn't amount to enough to pay for the labor.

After you have tested each ear of corn, shell off the tip and butt kernels and only save the middle part of each ear for seed. Shell each ear by itself, so you can reject any ear that you see, the kernels in which are creacked or damaged in any way. In that way you can discard those ears, while if you had shelled them together you could not and it would mean just that many missing stalks in your field. As you are shelling the seed you can also grade it by putting the broad, medium and narrow kernels in separate boxes, making the three grades, so the planter can drop more uniform. After you have your seed all shelled and graded test your planter and find what size plate will give you the best drop on each grade of seed; then put the seed in burlap sacks, not over one-half bushel in a sack; label the sack with the name of the kind of seed it contains and the number of the planter plate that dropped the desired number of kernels per hill, that you wished; then hang the sack of seed up where they are dry and no danger of gathering moisture and when planting time comes you are ready for business, no time lost shelling the seed or testing the planter.

SOME IMPORTANT DON'TS.

Remember, don't put the shelled seed-corn in boxes or barrels; if you do it is liable to heat and spoil.

The number of kernels to plant per hill will depend on the kind of soil, conditions of weather and the insect in the soil, and what you want the crop for. If for fodder you will want to plant it thicker than if you just wished to harvest the corn. You will have to be your own judge as to the number of kernels best to plant per hill.

The kind of a planter to buy will depend upon how you have prepared your seed-corn. My advice is for you to shell and grade your seed-corn as you intend to for planting, then take some of your own seed-corn and test the different makes of planters and buy the one that drops your corn best. You want a planter that will plant your kind of corn—not a planter that works well on the corn that you do not want to plant. Don't buy a planter and then have to buy seed-corn to fit the planter; buy the planter that works best with your own seed-corn.

Don't be afraid of getting too good a seed bed. Soon as you have in your oat crop, disc your corn ground; it stops evaporation and retains the moisture, the land will work up better, you will get a better seed bed and the result will be a better corn crop. Fall plowing warms up soonest and you can prepare a better seed bed and get your corn in earlier. The winter freezings and thawings pulverize the lumps and destroy the insects, the corn makes a better growth before dry weather comes and will mature earlier.

Spring plowing has its disadvantages. If a wet season the ground is hard to get in shape, more or less lumps, and slow in warming up, dries out more than fall plowing, corn grows slower, is later maturing, more soft corn and does not yield so well as fall plowing.

The time to plant will depend on the weather, condition of the soil and preparation of the seed bed. Early planting as a rule gives the best results, as the corn gets a better start before the dry season comes, the roots are better developed and can resist the dry season better. The early planting yields better, matures better, less danger of being caught by the early frost, less soft corn and you can select better seed-corn for next year's crop. Late planting is affected more by dry weather, is slower maturing, more liable to be caught by the frost, more soft corn and less chance to pick good seed-corn.

FAVORS SHALLOW PLANTING.

Shall I plant my corn deep or shallow? As a rule shallow planting gives the best results if you have prepared a good seed bed; but if the ground is dry and lumpy, then you will have to plant deeper so the seed will receive moisture enough to germinate. When the corn is planted early and deep the ground is cold, seed will sprout slowly and if cold rain follows the seed will sour and be weakened. If a crust forms on the ground it will not all get through. You will have weak stalks and missing hills and may have to replant your entire field.

When planting your corn get it into as straight checks as possible. It is easier to cultivate and to keep clean and you are less liable to destroy any hills in cultivating. Every hill you destroy means that much loss. Harrowing corn after planting destroys the small weeds, smoothes the ground and makes the first cultivation easier, but the tramping of the horses on the rows will destroy some hills and the harrow will deposit rubbish on some of the hills.

Blind plowing and harrowing before the corn is up is a good plan if your ground is foul with weeds. You will destroy the weeds and some of your stand of corn, but you will have to be the judge for yourself which will give you the best results—a good stand with weeds or a thinner stand without weeds.

Harrowing the corn after it is up will destroy some stalks, but if the weather is dry the damage will not be so great. If a crust has formed on the ground you will have to resort to harrowing to break up the crust in the hills and to stimulate the growth of the corn.

Cultivate soon as you can see to follow the row, and do it thoroughly. Don't be afraid of hurting the corn roots the first time. Cultivate deep and destroy all the weeds possible; loosen up the ground and stimulate the young plant so it will not be stunted and keep it growing so as to get ahead of the weeds and insects. After the second cultivation you must be careful not to cultivate deep or too close to the hill or you will injure the roots, retard the growth and make it slow maturing and reduce your yield of corn. Cultivate your corn at least five times. Plow shallow the last time or you will injure your corn roots.

When fall comes gather your seed corn about October first, so as to be sure to have good seed for your next crop. Go through the field with a sack, picking the best seed ears, then hang them up to dry in an open shed. Don't let them freeze until thoroughly dry. After it is dry, store where it will not gather moisture. The attic is a good place to store seed corn, as the air is dry.

Don't gather immature corn for seed, for it is weak in vitality. Pick your seed corn from your best field. If your corn is too late maturing gather your seed from the first stalks you see ripening, or if on the other hand, too early maturing, wait until later and then gather your seed from the stalks that are still green.

There are other things besides poor seed-corn that reduce our yield of corn per acre—improper drainage, poorly prepared soil, lack of fertility, poor cultivation, unfavorable weather and insect pest. The only successful method of combating with the insect pest is by rotation of crops, not growing more than two consecutive crops of corn on the same land.

Poor seed-corn means missing hills, weak stalks, barren stalks, poor stand, low yield, less profit and some times a failure.

While, on the other hand, good seed-corn means better stand, surer of a crop under the same conditions, more corn per acre, cost of raising crop less per bushel and more profit for your labor.

CORN CONCLUSIONS.

(From United States Department of Agriculture. Farmers' Bulletin No. 253.)

(1) Approximately 15,000,000 bushels of corn are required for seed every year in the United States.

(2) The yield depends largely on the vitality of the seed planted.

(3) Make your own germinating box and test the vitality of every ear of corn before planting.

(4) The time required for individual ear tests is very little; twelve or fifteen ears will furnish enough seed to plant one acre.

(5) Count the sprouts very carefully; any ear failing to show 100 per cent of good sprouts should be rejected.

(6) Of 3,322 ears tested, 1,906, or more than one-half, were unfit for seed. These samples were taken from ears picked for seed by good, careful farmers, and are evidently much above the average.

(7) Field tests have shown that seed of strong vitality will produce the largest yield of corn.

(8) Granting that the samples tested are representative of the present supply of seed-corn, the testing of every ear and the subsequent rejection of poor ears will increase the stand 13.7 per cent.

(9) An increased stand of 13.7 per cent would mean an increased annual yield of 298,140,695 bushels, with a value of $100,739,912.91, calculated on the average yield and price for the last ten years.

THE TOWNSHIP AS A ROAD DISTRICT.

G. S. McConnell, Princeton, Iowa, Before Scott County Farmers' Institute.

Theory in regard to a matter of this kind may seem to be all right, but when it comes to the practical test is often found wanting. We have all read glowing reports of how well the township road district plan worked in certain localities, how much better the roads were kept at less expense, and many more flattering comments of the same nature. We used to see articles of this kind in the papers long before the plan was adopted here. I have always had an idea that such articles were written by men who could write as beautiful as a certain editor of an agricultural paper of whom I once heard. His writings about a well-kept farm were so fine that people journeyed from far to see his ideal. But lo! when they beheld the poorly-kept, run-down looking place, they didn't stop to see the handsome editor.

The one district plan has some advantages over the sub-district plan, the principal of which is, the supervisors can hire men and teams to work the roads, thus having the right and privilege to get a good working force, while under the old plan the supervisors were hampered in this respect, being obliged to employ such help as might be in their districts, whether good, bad or indifferent. It then should be expected that the one-district man would do more and better work, but it is done?

Are the roads in general better worked under the new plan than under the old? I have heard ten men say "no" to this question to one that said "yes." There are many reasons why the one-district plan does not give satisfaction. First, it is out of the question for either supervisor or the trustes of the township to inspect all the fifty to seventy miles of road at all seasons, unless they are paid for it, and that eats up the tax. It is not likely there is one man in this or any other county that his business takes him over all the roads in the township in which he lives (unless it is the assessor) once in five years, let alone five or six or dozens of times in one year, in order to note what places are inclined to be miry, what pieces of road do not need to be ridged up, what hills wash readily into ditches or get out of shape in any way, what bridges and culverts need repairing and numerous other little matters that need to be watched. The supervisor that has only about a two miles square district to look after has usually sufficient opportunities to study every rod of his eight or ten miles. Give him the right to hire his help. No man has ever served as supervisor under the old plan as supervisor but what realized how he was handicapped by that phrase "to be paid in labor" column that invariably appeared in his road tax list. If the one man lives in the center of a six miles square township, he has to go six miles to get to any of the corners, he is even then too far from most of his work. If his home is at one side, all the worse. If there were seven or eight of him, he could do as the colored man said he would have to do when his calf strayed, "scatter himself out and hunt for it." It is often the case that there are dozens of places in a township that require attention all at once. Under the one-man rule, many such places are neglected for weeks, when they should not be days, simply because he can not get to all at the same time. This is no reflection on the individual supervisor, nor do I wish to discredit any man who is or may have been acting in that capacity, though, of course there is the chance for the place to be secured through political pull and be given to a man who is not competent at anything else, like the boy's dog: The boy said he was a good coon dog. "Did he ever catch a coon?" "No; but I know he must be a good coon dog, because he is not good for anything else."

I live in a hilly part of the country. Under the old plan, our district was two miles square. On the roads in it, there were thirty hills with a pitch of from one to two and one-half feet in ten. The steepest of these were graded by the supervisor, besides all the other work necessary on new roads. In time many of the cuts became narrow, but the supervisor each year either widened them or cut down others. Since the new plan has been adopted, there has not been one hill in the two-mile square widened or graded but what has been done by the county, and we have a very good man for supervisor, too. Every culvert, bridge, hill and stretch of level is each a problem in itself. There is probably not a mile, possibly not one-half mile of road in this or any other county that requires the same treatment the whole length. If there was money enough in it to employ the one man all his time, we might have better roads.

If all the farmers would use the drag and use it at the right time, it would be a great help, but there are many who will not use it at all. Often the time for using the drag lasts but a day, sometimes scarcely half a day, when the weather is very warm. At such a time a township supervisor can drag but a small part of the fifty or more miles of road, and he can not see to having it done near as well as the party who has but a few miles to attend to. A supervisor or "caretaker" of five or six miles could, usually, if he was paid for it, as he should be, drag the whole himself when the ground is in proper condition.

Why can't we have some uniformity about the width and curvature of the roadbed? I drove over some dirt road in coming here that is only wide enough for one track with deep ditches on each side. Teams meeting in such a place, one would have to back out. Traffic in such small space, when there is mud, cuts it up far more than where there is plenty of room. In a stretch of two or three miles of macadamized road, there is part where the eight or ten feet wide of rock and gravel is set up on a "razor back" with sides so steep that it is unsafe for vehicles to turn off. This condition is very unnecessary. In other parts, the macadam is very little higher than the ground on either side, with plenty of room on each side for teams to pass.

There has been a great deal said and written about making the roads good for the mail carrier, and it is all right, but he don't care whether the hills are steep, or the track is narrow, so it is smooth and hard. His trips are all made in daylight. Why don't we think of the doctor? You call him in the night and want him to get to you just as quick as possible, and in doing so, he often must pass teams on his route. For his safety, the road-bed should be just as wide as possible.

Assistant Director, Public Road Inquiries, Maurice O. Eldridge, in Farmers' Bulletin No. 136, entitled "Earth Roads," insists that the grades should be "such that loaded vehicles may be drawn over them without great loss of energy," and says that "accurate tests have shown that a horse which can pull on a level road one thousand pounds, on a rise of one foot in one hundred feet can draw only nine hundred pounds, one foot in ten feet can draw only two hundred and fifty. Per cent of the grade means so many feet up in one foot horizontal. Ten per cent grade means a rise of ten feet of horizontal distance traveled." The same authority says the "fall from the center to the sides should under no circumstances exceed one in twelve." In Vermont, the system has been introduced of dividing the roads into certain length and alloting each length to a section man, care-taker or farmer and it is a matter worthy of note, that in Vermont the general results from its application are that much better roads are secured at less expense.

OUR COUNTRY ROADS.

C. M. Adams, Davenport, Iowa, President of Rural Carriers' Association of Iowa, Before Clinton Farmers' Institute.

I want to touch the subject briefly under five heads, viz.: Material aid, state aid, county aid, township aid, and, lastly, the farmer's aid.

NATIONAL AID.

I recall that the National Farmers' Institute that was held in Rock Island last fall adopted the resolution that was introduced by James McKinney in favor of national aid and the passing of the Brownlow bill. Now, all of this sounds very nice, but, alas, it is never realized.

Just so with national aid for our roads, it is a farce pure and simple. Just something that our political friends are trying to hand to us to cause the farmers to think they are working for them.

We have today the only government aid that we will ever get, and it is worth more than what we have asked for. It has improved thousands and thousands of miles of roads. I refer to the rural free delivery that covers over 53,000 miles of the Iowa roads, and they must be kept in good shape.

The agricultural department is now co-operating with the postoffice department, the work is being systematized and there is a steady improvement in the condition of our highways, more noticeable in other states than in ours, but it is coming just the same.

STATE AID.

Now, that sounds better than national aid, but let us see, some one says let the state pay 50 per cent, county 25 per cent, township 15 per cent, and abutting property 10 per cent and we can have fine roads Now let us see what that really means. It means simply this: Take the hard earned money out of your pocket, put it into the other fellow's pocket, then let you reach your hand in his pocket and after some kicking you can pull out about 90 cents on the dollar. Say, Mr. Farmer, how much did you get from the other fellow (the state) for nothing? Did you ever stop to think where the state's money comes from? The taxes, of course, and who pays the taxes? You do. Yes; I expected some one was going to speak of the $50,000,000 that the state of New York is spending for permanent roads. Let me say right here before that state gets through spending the $50,000,000 on permanent roads it will need another $50,000,000 to repair the permanent roads that are built.

What is good for the farmers of New York, where eighty-two per cent of the state's wealth is in her cities and commercial industries and only eighteen per cent in farm values, would not do for you farmers in Iowa, where the order of things are reversed and over seventy-five per cent of the taxes are paid by the rural population.

Our state aid is to come through the Iowa highway commission, that is working on an appropriation of $5,000 per year. (That should be increased to $10,000 by the present state legislature.) It is studying the road problem from a scientific standpoint and putting the same in a practical form so it is applicable to the different localities. The use of concrete for culvert bridges, etc., is being tried out in a practical way, specifications for larger bridges are being prepared. Expert engines and practical workmen are sent free of charge to any part of the state to demonstrate and help in road work. That is the kind of state aid that we need. We don't want the other fellow to do, we want to be taught so that we can do.

In addition to this, the highway commission conducts a good roads school at Ames for a week or ten days each year for the benefit of the road office. I was there last year and I want to say that if each township would send some good delegate there each year and pay his expenses, it would be money well spent. Why not try it. Let us become familiar with what the state is doing and give it a good, fair trial before we ask for more.

For full particulars of the work of the commission address Prof. Thos. H. MacDonald, Ames, Iowa.

COUNTY AID.

As the county treasurer receives all the road tax and holds the same for a length of time, it is well to be in close touch with the county, but the township should not lose its identity. As most counties contain one or more large towns that are built largely by the farmers, it is only right that a part of the taxes paid by the industries of the county seat should come back to the rural districts.

The county grading gang has worked very successfully in many localities. It has been found easier to get the work done at the right time by letting the work of several townships to one contractor that makes a business of it and has the horses or mules to do the same. Less machinery will be needed, especialy of the heavier kinds.

Without question, dirt can be moved cheaper with the use of the elevating grader than the blade machine. As it would take the entire year's tax of a township to purchase an elevating grader, it is out of the question for a single township. This will serve as an example in favor of the county gang and show how better work can be done at less cost with less money invested in road machinery.

Again, we are living in the cement age. Ten years ago 1,000,000 barrels of Portland cement were used in the United States. In 1905 25,000,000 were used, and a large part of that went into road making.

If the county had entire charge of all the cement culvert work, it could be done by one gang at a less cost with no more money invested in molds and tools than would be needed for two or three townships, and with a good mixing machine and a trained crew all work could be done up to the standard.

TOWNSHIP AID.

The township has a less, but still important part, that of maintaining the roads after they have been put in proper shape. We should come to realize that one of the worst enemies that we have to good roads are the weeds that grow by the wayside. We let them grow, or they simply grow without our letting, all summer long and fill up the ditches and then in the spring or late in the fall we work them and their roots into the center of the road and the humous of the decayed weeds makes the soil nice and porous and it retains the water, and the weeds are in bad shape after each rain and in the spring. Don't forget to keep up the fight on the weeds.

The general plan that has been followed with the roads in the past, of putting them in good shape once a year and expecting them to stay that way till the road boss came around again, is about as sensible as for some fond mother to wash the face of her darling and expect it to stay clean for a year.

Our roads must be kept smooth, and the King or split log drag is the article to do it with. After each rain the road should be dragged. It will smooth the surface and let the water off and at the same time it will kill the weeds that I have spoken of.

THE FARMER'S AID.

This is last, but it is most important. The solution of the good roads question is in your hands, and in our state where the bulk of wealth is in our farm lands you must furnish the money for the work. It is up to you to see that each dollar paid in taxes returns one dollar's worth of honest labor on our public roads.

Township politics, so far as road officers are concerned, are a curse to the cause, and I want to call on you now to support competent men for your trustees, regardless of politics. Give them your loyal support, and advise with them.

One of the chief reasons why our roads are not better is because you have not demanded it. You are indifferent. I am sure that if the farmers of this county would get together two or three times in each school house in the county in the next six weeks and talk good roads, adopt plans and appoint good strong committees in each township to meet with the trustees at their regular meeting that will be held the first of April, that great results would be accomplished. If you want good roads, you must talk good roads at the right time and now is the right time to begin.

Some will say we need more money to make good roads, and that will mean higher taxes. Time will not permit me to go into this question here more than to say it is simply foolishness to ask for more money before we learn how to spend what we have in a wise way, so that it will return to us $1.00 in good roads for each $1.00 paid in taxes.

PERMANENT ROADS.

There are 102,448 miles of public roads in Iowa, of which 293 miles are stone and 1,465 miles gravel, that cost $3,106,607, according to the report of 1904, or over $2,000 per mile.

I do not advocate the general building of the so-called permanent road for the simple reason that it will cost twice as much to maintain the macadamized road as it would to make as good a dirt road ten months in the year as can be made with macadam, when kept in its best condition.

Again, macadam roads would be very expensive, even if they could be had for nothing, in a country like the prairie states of the west, subject to long periods of drouth, which shrinks the binder from the rock, blows out the fine parts and leaves the road in as bad condition as a mud road at its very worst. Better wade through mud than bump over loose stones that have to be carried off and replaced by stones newly quarried. The expenses of maintaining macadam roads after six or eight years is from ten to fifty dollars per mile per year, except in towns where the sprinkler is used to keep it from "raveling." There is no question about this.

Enough has been done in the state of Iowa to demonstrate to any man who will keep his eyes open, that the road drag used as we have directed over and over again, is the only practicable solution of the good roads question.

In fact, we have had experience enough with the road drag in the last two years to satisfy any man that, after a road is once graded an expenditure of less than $5 a mile will keep it in first-class condition nine or ten months in the year.

We never argue with the men that say the drag is no good, for the simple reason that if they will make a drag and use it as directed, there is no need of argument; and if they will not make a drag and use it, it is useless to argue.

Farmers, you should wake up to the reckless waste of your money under our present system of road making. Let us all resolve now that we will be honest to the township and work as hard on the road as we do on our farms.

HELP FOR THE LAME HORSE.

Locating the Sore Spot—Determining the Cause—Treating the Trouble.

Metropolitan and Rural Home—A. S. Alexander, F. H. A. S., M. D. C.

The hard-working horse suffers terribly from many an ache and pain and is unable to tell his owner in words just where the trouble lies or what is causing it. Often we have thought it would be a grand thing indeed were every horse gifted with the power of speech, like Balaam's ass in the Bible, so that he might stop, turn around and say to the driver: "Here, you! That old shoe on my left forefoot is out of place and pinching dreadfully. For humanity's sake stop at the 'smith's and have it reset." Or we can fancy him stopping suddenly and crying out: "Great Grass Fields! I've stepped upon something sharp and it has pricked the 'quick.' Won't you please see what it is and pull it out for me?"

To be sure, the poor horse can not speak in words, but, nevertheless, he can show to the observant driver plain evidences of pain, and one who has become expert can quickly determine the exact seat of trouble in a majority of cases. In many instances he can give "first help" until the veterinarian has had an opportunity of adopting more scientific methods of relief.

LOCATING LAMENESS.

Lameness is indicated by "nodding" of the head if the trouble is in a forelimb and the "nod" is away from the limb affected. In other words, there is a drop of the good leg to relieve the weight upon the unsound one and this dropping causes the head to nod downward on the sound side. When you see a nodding horse approach, get into the habit of nodding in unison with the animal and soon it will become an easy matter to decide which leg is the lame one. Sitting behind a horse, one can nod with the horse in this way and quickly determine which leg is lame; then a critical search must be made for the sore spot.

It is by nodding and flinching that the horse tells its owner that soreness is present, and these actions surely should be as suggestive as words. The more so when we watch the suffering animal at rest. He does not rest! If the soreness is in a forefoot he advances the hurting member in front of the body and constantly shifts the position as if trying to escape from the pain caused by pressure. If there is real agony suffered from a foot lameness the foot is held off the ground, and this, too, is a marked symptom in any severe injury below the knee or hock joint. If there is great pain in both forefeet, both of them are thrust out in front of the body, the attempt of the horse evidently being to rest as much as possible upon the heels. This indicates pain in the front of the feet and the trouble is pronounced "founder" by the experienced horseman. Naturally, when the forefeet have to be extended the hind ones must be thrust well under the body to support the weight of the animal, as the horse's center of gravity is located just back of the elbow joint and about one-third of the distance between the underline and back at that point. The hind feet must approach this center to maintain the equipoise of the body. And so we say when we see a horse stand or attempt to walk with the forelegs extended under the body: "There is soreness in the forefeet and he is attempting to relieve weight from those parts by letting it come largely upon the hind feet." Or the horse may fail to stand firmly down upon his hind feet when standing "at ease" *because he is not at ease*, and so he shifts from one foot to the other or stands with the fetlock (ankle) "knuckled over" (cocked) to ease that part or some neighboring part or because there is soreness in the upper joints or muscles.

Watch him as he tries to walk and it will be seen that the sore leg is handled stiffly and carefully. If there is a shoulder lameness the foot will stand down flat on the ground, but as a step is made the leg will be dragged forward stiffly, not lifted easily over an obstacle and, on trotting toward the observer, the leg will be seen to roll outward. Hip lameness also may cause rolling outward of the hind leg with a dropping motion of the hip away from the lame leg, and, on turning a horse quickly, either shoulder or hip lameness becomes more pronounced and one is able to detect the limb affected. A short step with a foreleg may indicate shoulder lameness, while a long step with a hind leg is often indicative of ringbone lameness located in the pastern region of the limb. Lameness located in the knee causes stiffness of that joint and on lifting the foot and flexing the knee it will be found impossible to make the heels touch the elbow or the tendons at the back of the cannon bone to lie snugly along those of the forearm. The knee will be kept more or less bent forward (flexed) if causing pain; the elbow point will be dropped downward if there is soreness under the shoulder or a broken rib at that part.

If a horse starts out lame in a foreleg, quickly "warms out of the lameness," is as lame as ever when rested a few minutes and again started out, and if the foot is thrust out in front when standing still, one may confidently conclude that the lameness is located in the "navicular" bone and joint of the foot contained in the horny wall of the hoof; if on the other hand, the lameness aggravates the farther the horse travels, is in a foreleg and not associated with "pointing" (thrusting forward) of the foot, the most probable seat of the trouble will be just under the knee on the inside of the leg and probably due to "splints," which are bony growths upon the cannon bone where the small splint bones (metacarpals) are located.

Chronic soreness of the fore feet (grogginess) when not due to navicular disease indicates the probable presence of "corns" which are located in the angles of the heels between the "bars" and the wall; chronic founder (laminitis) or old standing contraction of every part of the hoof which, as we have seen in a former article, causes squeezing or pinching down upon all of the sensitive underlying tissues producing the horny wall, sole and frog.

When a horse starts out lame in a hind leg and soon gets over the lameness with exercise, "spavin," located in the hock joint (not the "knee" of hind leg), is to be suspected, and in that trouble there will also be wearing away of the toe of the shoe, resting upon the toe when standing at ease and "hopping" with the lame leg when made to "stand over" in the stall. Lameness located in the stifle joint (at flank) may cause wearing away at the heels of the shoe and further may be indicated by swelling of the joint, or, in young colts, a snapping in and out of place of the "patella" (knee cap), at which times the hind leg will be thrust backward and held so until some change of movement causes the patella to snap back into place again. "Stifled" is a common term given by horseshoers and others to any lameness of the hind leg, the true location of which they are unable to determine. A horse can only be correctly said to be "stifled" when the patella is out of place, and in that condition the affected leg can not be extended forward. Dragging the toes of both hind feet may indicate weak back, sprain of the muscles of the loins, disease of the kidneys or diseases such as "osteoporosis" or "locomotor ataxia," which have other symptoms as well, but usually cause some mysterious forms of lameness such as we have indicated.

Lastly, it may be said that "heat, pain, redness and swelling" usually indicate acute inflammation and may guide the examiner to the true seat of the sudden or acute lameness, while "cold swelling," or thickening of parts may as surely indicate the location of chronic troubles affecting the tendons or muscles, and pronounced enlargements, hot or cold, or bony growths, tell the story of the cause of lameness implicating joints.

SEEKING THE CAUSE.

When Dobbin is seen to be lame there are two ways of acting under the circumstances, viz.: the *cruel* way and the *humane* way, and, needless to say, the latter is the *right* way. The cruel man sees that his horse is lame, but takes a keen interest in the scenery or pays not the slightest attention and goes on calculating how to increase his pile of "filthy lucre" until the officer of the humane society stops him and takes him before the magistrate. The right-acting owner instantly shares in the suffering of his limping horse and is not satisfied until he has taken him out of harness and instituted measures for relief of the pain.

Having unhitched and removed the harness, let the horse stand on the board floor without restraint, other than the halter, and make the necessary examination. Bearing in mind what we have said about the things indicative of lameness locations, the horse in a moment or two may show plainly by his manner of standing and acting, which leg is affected and then what part of the limb is causing the pain. This much learned, the next step—no matter what is evident to the eye—should be to pick up the foot of the affected leg and make a careful examination of the nail-prick or other injury. This is done by removing the shoe, then by tapping with a hammer over each nail hole and at the spots where the nails have been clinched; then by squeezing with a large pair of pinchers lightly over every bit of the sole. Instantly when the sore spot is touched in this way the horse will flinch by pulling or jerking the foot, and that is enough to indicate the necessity of attention being given to the hoof. If the foot shows no sign of trouble, after the most thorough search imaginable, then, and then only, should one commence an examination of other parts of the limb, unless, of course, there is a fresh, bleeding or bruised wound known to have been caused by accident.

Apart from a nail-prick, crack, stone-bruise or other injury of the foot, or sudden attack of founder (which is indicated by the symptoms we have described together with high fever and lack of appetite), sudden lameness is most likely to have arisen from a sprain, wrench or injury of a muscle or tendon or joint, and these, in turn, have each to be thoroughly examined for heat, soreness, swelling sensitiveness, thickening, softening, tightening, relaxing, presence of cuts, abrasures, abscesses, collections of serum, etc. In a majority of lameness cases the cause is located below the knee or hock. Shoulder or hip are less often affected and often most difficult to determine as the true seat of the trouble. When there is no history of injury sudden lameness may be attributed to rheumatism, and in that case tends to shift from one joint or muscle to another place in the body and often causes "cracking" of the joints when the animal is made to move about. The latter symptom is mostly seen in old horses and in chronic cases of rheumatism. In acute rheumatism there may be fever and as much local pain, heat and swelling as is present when the trouble is due to injury of the part affected.

Sudden stiffness and lameness of one or both hind legs in a horse that is fat—has been idle for a day or two and during that time heavily fed on oats or other rich food, and often appears on first exercising the horse after rest referred to and comes on with sweating—is associated with swelling and hardening of the muscles of the hip and by dark red or coffee color of the urine. This disease is azoturia, by many horsemen erroneously called "spinal meningitis," and, when severe, ends in paralysis of the hind legs and results in death. It causes the loss of hundreds of valuable horses in the large cities following holidays or periods of inclement weather during which horses are rested and heavily fed.

In seeking the cause of lameness, therefore, take everything into consideration, for the history of the case is important, seeing that the sufferer can not talk, and may settle the matter when, on removal of the shoe and careful examination of the foot, tendons and muscles, no cause of the trouble can be found. Despite the most careful examination by the owner or his assistants it will, however, often be found impossible to locate the seat of the lameness; this applies most often to the slight, spasmodic, mysterious cases of lameness which are the bane of the graduate veterinarian as well as the skilled horseman. Knowing then that much skill is required to determine the location and cause of many lamenesses of the horse it certainly is best, where possible, to immediately call in a qualified practitioner to examine the patient and institute the proper course of treatment.

PRINCIPLES OF SENSIBLE TREATMENT.

In giving first aid to the suffering horse, common sense should suggest the doing of safe and soothing things rather than the adoption of radical and often irritating measures. Hot or cold water applications are, for example, always indicated as safe and soothing to an injured tendon or muscle. On the contrary, much additional suffering is unnecessarily caused by the empiric who treats such injuries by the immediate application of smarting, blistering nostrums; or he may do incurable mischief by bleeding the animal or administering great doses of active poisons, such as tincture of aconite, which should only be used by the graduate who understands the lessons to be learned from taking the horse's "pulse." A hot or cold poultice often is soothing and beneficial to an injured foot or joint, provided always that it is a *clean* poultice. A salve may be of benefit to a wound, but it must be an antiseptic, soothing salve, not axle grease, which is a salve, to be sure, but unsuitable and usually filthy. A dressing powder may be indicated for a wound, but it should be a suitable powder and not a strong caustic, such as sulphate of copper (bluestone) or corrosive sublimate (bichloride of mercury) or white arsenic applied with the hope of burning off the "proud flesh" which is a horseman's horror, but nature's natural new tissue, produced for reparative purposes, but aggravated into exuberance by irritation and filth of unwise treatment. On general principles, every liquid used about a wound should contain sufficient disinfecting substance to render it a preventive of germ-growth. To this end get into the habit of mixing a commercial coal car disinfectant, such as zenoleum, in all bathing water, fomentation water and poultice water used in practice. Next use clean cloths and bandages saturated with a disinfecting solution such as we have prescribed—say a teaspoonful of the disinfectant to a cupful of clean water. An injury to a hoof necessitates removal of the shoe, and all of the shoes if the horse is to stand in the stable for a long time or is forced to lie down a great deal. Then the hoof must be thoroughly cleansed before a knife is used on its deep, sensitive tissues, and to this end the outer layer of filthy horn should be cut away from the sole, after which the part should be soaked in a disinfectant solution and then treated with a clean knife used to cut down upon the wound caused by a nail, for instance.

Lockjaw follows failure to thus open up a nail-prick hole and use a disinfectant. It is no use merely to pull out the offending nail and then pour in some turpentine, as is commonly done; neither does it help much to cut down upon the hole with a dirty knife and then apply a cow-dung poultice, which swarms with germs at the time and is one of the best possible substances for the successful multiplication of germs. which thrive as does the yeast-plant when mixed with moist, warm dough. Oxygen or fresh air kills the tetanus germ and other germs. Let oxygen into wounds and have the air clean by keeping the stable clean and well ventilated. Protect a wound against germs, rest the injured part, treat it gently, tie the horse so he can not bite it, avoid the use of irritants, dirty dressings and rough handling and nature will often do all the rest of the necessary surgeon work.

Treat a sprain by applying a plaster of paris cast if the ankle is implicated and on removal of the cast, in two weeks, application of a blister, such as cerate of cantharides, may be all that is necessary. Treat a swollen, hot and sore joint, where possible, by applying a soothing poultice or antiphlogistine or other plastic dressing, or by putting on hot or cold compresses and using a simple and safe soothing lotion, such as extract of witch hazel. Use no hot liniments or blisters upon an inflamed, recently injured part, unless in the single exceptional instance of a joint just punctured by a nail or fork-tine. Use the liniments and blisters after the inflammation has subsided and to stimulate action in the parts and by increasing blood flow remove products of inflammation and promote repair.

Give prolonged rest to all cases of lameness; this alone will cure many an injury causing lameness. Stop bleeding by picking up and tying with clean, silken cord saturated in a disinfecting solution; don't fill the wound with filthy cobwebs. They stop bleeding, to be sure, but fill the part with germs and may lead to fatal blood poisoning. Slight application of a red-hot iron to a bleeding vein which can not be ligated, or packing a cavity with oakum saturated in tincture of iron, will stop bleeding promptly, and when the blood spurts from an artery and therefore is light red in color, remember to bind tightly around the limb above the wound, but below it if the blood comes from a vein and therefore is blue-red in color and flowing instead of spurting.

Bandages snugly applied are indicated where there is cold swelling of limbs (stocking); also to hold antiseptic cotton upon a wound treated with a dressing powder such as is made of one part of iodoform and six parts of boracic acid. This powder will be found suitable for dressing wounds of the foot, or coronet of hoof, which so often cause lameness. A suitable liniment for stimulating parts in lameness, where the inflammation has subsided, is made by mixing together one ounce each of turpentine and aqua ammonia with four ounces of druggist's soap liniment and water to make one pint. A suitable lotion for use on barbed-wire wounds, often productive of lameness, either at the time or through bad treatment, is made by mixing together one ounce of sugar of lead, six drams of sulphate of zinc, one dram of pure carbolic acid, and a pint of cold water. Label the bottle "poison;" shake the medicine thoroughly before using and apply several times daily by dashing straight from the bottle on the wound. To reduce heat and pain in a swollen joint the compress may be kept wet with a "refrigerant lotion" such as a mixture of one ounce each of powdered saltpetre, chloride of ammonia and fluid extract of arnica in a pint of cold water. Blistering is necessary for all bony growths that cause lameness, and often it is best to have the parts fired by a veterinarian before applying the blister. A suitable blister for bony growths such as "splints" and ringbones is made by mixing together one dram of biniodide of mercury and two ounces of cerate of cantharides. This blister will also do for application to a spaving after firing the joint, but where lameness is due to shrunken muscles the cerate alone should be used, and as a general rule a strong blister must not be applied high up on the hip as sloughing of the skin will be sure to follow.

In conclusion, let us advise that instant attention should be paid to every case of lameness and that home treatment should be simple and soothing, the more severe measures sometimes necessary being left to the hands of the skilled graduate veterinarian.

MULE BREEDING PROFITABLE.

D. Z. Evans, Jr., in Metropolitan and Rural Home.

Despite the fact that the automobile has come to stay, and that to the thousands of vehicles of this kind that are now in use, thousands are being added yearly, horses and mules will not and can not be dispensed with. Like the sewing-machine and hundreds of other labor-saving inventions, when they came on the market everyone predicted the death-knell of the workingman or woman, yet instead of lessening avenues of labor, they seemed to increase it. So it is with the use of motor vehicles; they will by no means cause an absolute disuse of the horse or mule, but rather add to the facilities for work and transportation. It only caused a slight jar in the economy of things when these motors came to stay, in the system of readjustment to meet the changed conditions, and now horse and mule breeders are as active as ever, and making as much profits. In fact, their profits are greater, for they are giving more care to selection and breeding.

The demand for first-class mules at highly remunerative prices is steadily on the increase, for steady, heavy work in the cities and on the farms and plantations. Heavy pairs of strong, willing and well-broken mules are eagerly sought for by merchants and teamsters in the big cities, and the prices range from $350 to even as high as $800 or more per pair. Mules of this character are more reliable than the average heavy horse; they do not tire out as quickly, are less liable to disease, and they stand the hard pavements much better. Their lasting qualities, under the severe strain of heavy city work, are fully double that of a horse. While they can subsist on coarser food than their cousin, the horse, I have always found it to pay big dividends to give plenty of food even to the mule, and when generously treated regularly with food, you can always call on the mule for long hours and continued hard work.

While mules are hardier from birth all through life, it is a mistaken idea to give them short rations and poor food and care when in colthood, for such methods will produce undersized animals which are less salable and bring much smaller prices than do those which have been kept growing vigorously from the start. Grain food must not, however, be fed too lavishly to any immature animal, else it will weaken instead of strengthen the constitution, either extreme being prejudicial to health. After maturity the cost of keep of the mule is almost one-half that of the horse.

Never breed mules from tricky, ill-tempered or vicious mares, or from diseased animals, though too often farmers consider mares that are not fit for anything else as good enough to get mule colts from. Good, well-dispositioned and sound work mares of medium size and roomy build only should be used, and the service of a large matured jack. Like breeding live stock of any other kind, proper selection, both on the side of the sire and dam, is the first requisite, if you expect them to produce desirable offspring that will not only be eminently useful, but will quickly demand the highest market prices, and to this must be added proper care and shelter, seconded by suitable food in such quantities and at such times as will be most conducive to healthy growth and development. The mule colts must be castrated early, when about four to six months old, and if well cared for can be worked when two to two and one-half years old, though it is well not to push them until they are three years old, so they will attain their full development.

For careful farm work, good mules are far ahead of the average horse, as they are more careful when working among the growing crops and seldom if ever break down or trample upon the plants. While they can and will stand much ill-treatment and neglect, they respond to kind treatment and man is very foolish to treat them otherwise. On the southern plantations they stand the hard work and hot climate better than does the horse, while for teaming in the far west, on the plains or on the rugged mountain paths they do work that scarcely any other animal can or would, being enduring and sure-footed to a wonderful degree. The Government uses hundreds of these animals in transportation, in artillery and teaming, and it will be many generations yet before we will find machinery displacing them entirely, if ever.

The average farmer will find more profit and surer, and with far less outlay originally, in breeding high-class mules for sale than in breeding blooded and trotting horses. Some mules, too, possess considerable speed, one of the best sleigh animals I ever saw or rode behind, for a long trip, was a large, fine-limbed mule. He seemed to delight to be hitched to carriage or sleigh, and frequently trotted a mile in an even three minutes. It used to be my delight to catch some of the fancy teams on the road and beat them, for if I could not at first clean them up by speed, I almost invariably could by endurance, and my mule seemed to like the sport as much as did his driver.

When it is intended to make a specialty or regular business of mule breeding, by the exercise of care and judgment, and not being in too much of a hurry, a considerable total saving can be accomplished in the purchase of brood mares for the purpose. Even though you may have an abundant capital, it is not necessary to purchase fine, young and expensive mares to breed from, but attend the sales at the horse bazaars of the large cities, provided you are a good judge of horseflesh, and if you are not, then secure the services of some one who is. There are many animals which are put up for sale there and which are sold cheap, because they are footsore and useless for the time being in a city, owing to a season's hard work on the hard pavements; or they may have had some slight mechanical injury, all of which will usually be remedied in a few weeks or a few months in the country. Then, again, there are cities who use horses they do not care to keep, and sell them at a bargain. In this way of buying, a single season or two will enable you to fill out your quota of breeding mares, and effect a saving on the entire investment of from one-third to one-half, and have a bunch of as fine brood mares as could be bought anywhere for the purpose.

The things to be avoided in making such purchases are to refuse to purchase any mares which are vicious, for vices and tricks are almost invariably apt to breed, as will any disease or weakness, while an ordinary ailment or a mechanical injury will not. As most horsemen are aware of this and know how to recognize the diseases and disorders, it is not necessary for me to enumerate them, though even the best of horsemen will often get fooled, especially when purchasing an animal which they have seen for the first time, and necessarily do not have an opportunity to "try him out" before paying for the animal. However, if any of us knew just how never to make a mistake, things would be just too easy for anything.

There is one point in mule breeding that is perhaps not as much considered as it might be, and that is that much of the "mule look" in the mule can be tempered and improved by first breeding the mare to a stallion, having her first colt by him, and then afterwards breeding to the jack. It is an undoubted fact that the first offspring greatly influences subsequent ones. For instance, breed a mare first to a jack and you will undoubtedly get a fine mule as the result. Afterward breed even continuously to a stallion and every one of the mare's progeny will have a very noticeable mule look, no matter how fine the animals may otherwise look. By reversing the operation, the appearance of the mules will be greatly softened and improved, and the value consequently increased. A combination of apparently trivial things like this serves to increase the ultimate profits. A mule is merely a hybrid animal and as such does not breed, but there are good hybrids as well as poor ones, and poor, undersized, stubborn and weedy mules are even more worthless than are horses of the same order, unsalable as well as unprofitable.

To head the breeding stud, no little attention is needed in the selection of a fine, healthy, good-natured and well-developed jack. Some years ago it was a difficult and expensive matter to secure such an animal, or even his services, but now there are numerous firms and individuals who make a business, and a large one, of breeding as well as importing high-class jacks, from whom fine ones can be bought at a reasonable price. If the string of mares you start with is small, you can usually make a good interest on your investment in the jack by permitting him to serve others' mares in the neighborhood, or you can have one or two neighbors join in the purchase and use; but permit one who has tried both methods to advise the former, else there may be cause, ere long, for dissatisfaction, dissension, and trouble, while the jack may and no doubt will suffer through the separated ownership. Better own him yourself and then charge a moderate fee for service, thus absolutely controlling matters yourself.

To many it may seem strange to say that at one time, the ass possessed extraordinary speed and also endurance in an unequaled degree, which latter he still has rightful claim to. In Mesopotamia, large herds of wild asses abounded and were eagerly hunted by the nobility and considered fine sport. It required the services of fleet-footed greyhounds to run them down, and even these animals often failed to do so, running one down being considered an extraordinary feat. Near Bassorah, a town of Asiatic Turkey, not far from the Persian gulf, there now exists a famous breed of white asses whose lineage dates back to the Kings of Judah. These are bred there with the most careful methods, and as much pains is taken to breed them pure and of great individual excellence as is given by our noted horse-breeders in this country to their thoroughbreds. In their particular line, they compare with the famous Arabian horses. Why some of our enterprising breeders have not secured some of these remarkable Bassorah animals is rather strange.

The jack possesses unusual sexual vigor, and is capable of reproduction at the age of two years, though it is best not to permit him to serve many mares before he is from two and one-half to three years of age, when he is capable of serving nearly or quite twice as many mares as is a stallion without any injury to his pro-creative powers or to his ability to produce first-class colts. Unlike a stallion, he is gentle and not at all or at any time dangerous to handle or be with, and if kindly treated can be fondled and handled even during the breeding season, which is in the spring, as May and June colts are usually considered the best.

While there are many small and undersized mules, the average size is gradually and steadily increasing, due to better care in breeding and to better food and housing when they are young and growing. If stunted early in life, no amount of after care and food will remedy the neglect or inattention. There are many instances of large size in mules, one being the big mule in Philadelphia, owned by the political contractors, the Vare Brothers. He is known all over the city as "Vare's big mule" and stands some seventeen hands high. While such extreme size is unusual and generally undesirable, good, strong, able-bodied and above medium sized animals are the only kind to raise, those from 15 to 15½ or even 15¾ hands always being in good, paying demand, other qualities being in keeping. Those little 14-hand fellows may do some classes of work, and may find buyers in some sections, but why breed such animals when it costs but little if any more to breed fine, large ones which will sell for twice as much, and it takes no longer to bring them to a salable age than it does the former.

Well bred and well broken mules make a fine carriage team, and one which can be depended upon to bring you safely through a long journey, over long hills and through deep and muddy roads or long stretches of sandy plain. In sandy districts, they are much used for carriage purposes, and soon acquire the habit of lifting their feet high, to clear the sand, thus giving them fine knee action. I have driven such animals with both comfort and pleasure over the long, flat and sandy roads of lower Delaware, in Sussex county, where a horse used to an ordinary good road in other sections would have tired out completely the first few miles, if driven at the same gait we went with ease with the mules. In Kentucky and other mule-raising sections, they are now much used for carriage purposes.

UPS AND DOWNS IN STOCK BREEDING.

W. J. Kennedy, Iowa Experiment Station, in Breeder's Gazette.

Observation extending over a considerable period has revealed that the different breeds and clases of live stock have each had their times of prosperity and depression, when prices have soared to fabulous heights, then gradually dropped into gloomy depths to languish for a longer or shorter period, and then come again into more general favor. This see-sawing has sometimes been due to the whims of Dame Fashion, or the wild worship of a family fetish; sometimes to the enthusiasm and forcefulness of one or more wealthy or enterprising breeders in placing before the public the merits or claims of the breed they favor and pushing it to the front; sometimes to a change in the demands of the market as to class and quality of products. But there is scarcely a breed among the many bidding for public favor that has not experienced the ebb and flow of the ups and downs of demand and of values in the market for breeding stock. The very fact of these periodical fluctuations may be taken as fairly reliable evidence that no class or breed has indisputable claims to the title of best, and that all, or nearly all, have valuable characteristics or qualities that render them worthy of a place and of preservation.

In the field of horse breeding there is room and a place for both the heavy and the lighter classes, the latter for light work and fast traveling, the former for heavy draft, requiring less rapid movement but greater strength. Then the different breeds embraced in these classes are more or less suited to the wants of buyers and users, according to their needs, the nature of the soil they have to do with, the distance from markets and the tastes or preference of the men who breed or buy and use them. The demand for a certain breed of light or heavy stock in a district generally, or for the time being, also influences the breeding and raising of that class; for fashions change in the demand for these and market values change with the prevailing fashion.

These intermittent changes have perhaps been most marked and noticeable in the realm of cattle breeding for meat and milk production, no single breed having held the field of favor constantly or continuously, and all having had their periods of unusual demand and fancy prices, and of neglect and depression of values. At the same time the dealers who buy and ship, and the butchers and purveyors who kill and cut up the beef breeds standing highest in the public favor for the time being, and also those less fortunate in that regard, do not always agree that the former have the advantage as profitable carcasses from their standpoint, nor do feeders all agree that animals of the popular breed of the day, or its grades, are the most profitable for their purpose, while many butchers and feeders pin their faith to the breeds that are not in the swim of popularity.

For these reasons, and others that may occur to him, the breeder who has espoused a certain breed that suits his fancy and has had its day of prosperity need not lose heart or become discouraged because for a time the popular demand is not for his, and fickle fortune, in one of her many moods, is favoring some other. The sensible thing for him to do at such times is to weed out his worst animals, feeding them for beef or disposing of them as best he can, retaining only the best, and improving the character and quality of his herd so as to increase its usefulness and attractiveness, and be ready to take advantage of a turn of the tide when it takes place. During a depression is often a favorable time for a breeder to buy a good sire or a female or two for the foundation of a worthy family, as at such times, prices being low, the necessary outlay may be comparatively little more than he has received for his culls. The mistake is frequently made of selling off too closely, or of delaying to purchase in a dull time or in the early days of a rebound, waiting until the returning tide has reached its highest plane, then rushing into buying, and, when a decline in the market comes, selling for lower prices than were paid.

These statements apply equally to breeding and buying other classes of stock, as well as the beef breeds of cattle. The dairy breeds have each in turn had their days of sunshine and shadow, and no one authoritatively can claim that the breed he ties to is the best. Dairymen and others differ widely in their opinions as to which has the strongest claim to favor. There are inferior and superior producing cows in each and all of the breeds, and preference is largely a question of prediction, of environment, of contiguity to a general or special market, whether it be for cream or for the manufacture of butter or of cheese, for which latter the cow coming nearest to the dual-purpose standard may be considered by some the most profitable.

The point I wish to make is that in breeding and managing a herd of any breed, a man may not be discouraged if for a time his herd is not in the lead in public favor. With all breeds and at all times the process of testing and of weeding out the inferior workers should be carefully prosecuted, but especially in times of dullness or lack of active demand. And the best of any of the breeds will prove profitable even in the darkest days of depression. Breeders of various breeds of sheep, swine and poultry have also experienced these ups and downs in demand, but those who have staid with the breeds they prefer, and have bred and managed them intelligently, conforming more nearly to the quality of flesh or fleece demanded by the best markets of the time, have found a steady demand at paying prices, even in dull days, and have had a fair share of prosperous years, owing to a turn in the trend of the markets or an unusual call for animals of their breed from some particular district or country, to be bred in their purity or used for crossing or grading purposes for the production of a specific product for the time being in demand and bringing unusually good prices.

SYSTEMS FOR KEEPING MILK AND BUTTER RECORDS.

C. F. Doane, Maryland Experiment Station.

This is an old subject, but it is a question that should interest every man who depends upon his dairy for a large part of his income, and who desires to increase the profits coming from his herd. Dairying is one of the most profitable branches of agriculture when worked to the limit of its possibilities, and it is not very profitable that any dairyman is making as much as he should unless he is keeping a careful record of the milk and butter yields of each individual cow in his herd. Scientific dairymen, as well as practical dairymen, may find material for consideration in that portion of this bulletin, tables and discussion, dealing with the proper months in the lactation period for securing a fairly average test when it is not desired to test every individual in the herd every month she is in milk.

Perhaps no single advancement along dairy lines has contributed so much to the profits of the industry as the keeping of herd records, which enable the owner to know the exact amount of milk and butter produced by each individual animal, and thus determine if she is kept at a profit or a loss. This system, where it has been applied, has sometimes doubled the actual profit received from a herd of cows, and in some cases has turned a loss to a substantial profit. The producing end of dairying has, in the past, and is even yet on many dairy farms carried on in a most unbusiness-like way. The fact that communities largely engaged in this industry are nearly always the most thrifty and prosperous appearing is no refutation of this assertion; rather it is an evidence of the possibilities of this branch of farming.

The lack of the application of business principles to dairying is due very largely no doubt to the fact that dairying is more complicated than most of the other agricultural pursuits. Then, too, the fact that dairying has given some profit under all but the most adverse conditions has rather led the farmers to believe that they were doing pretty well any way, and it was better to let a good thing rest as it was. It is very easy to tell if a bunch of fattening steers or hogs have paid for the corn they have consumed. A farmer can easily determine if a field of corn has produced sufficient grain to pay for the work and fertilizer. These calculations are simple, the results even obvious. It is fairly easy to tell if a herd of dairy cows, taken as a whole, have paid for their food, though the problem has become a little more complicated, owing to the necessity of considering the value of the by-products, such as the skim milk and the manure. But to get the greatest value out of a herd one must go behind returns from the entire herd. It is not enough that the herd pays as a whole. The question concerns the product of each individual in the herd. Does every cow in the herd pay a profit on her feed? Fortunately, or unfortunately, as one may regard it, all cows do not produce the same quantity or quality of milk. Though they may belong to the same breed, or may be even closely related, they can not be depended on to be equally valuable. This makes it necessary for each cow to rest upon her own merits, and for the owner to determine the individual merit of each animal. In this particular feature is where the greater number of dairymen fail to apply business methods. Many dairymen, who are thoroughly grounded in the scientific and practical end of feeding, who understand the importance of good care and good surroundings for the cows, have failed utterly to realize the value of this most important part of dairying, and fail to keep any record of what the cows in their herd are doing. It is doubtful if one dairyman in ten keeps any records whatever, except, possibly, a rough idea of the total amount brought in by the herd during the year.

The lack of knowledge of the value of each cow in the herd leads nearly always to unusual and needless losses, from the fact that in practically every herd where no record has been kept there will be found a relatively large per cent of the cows that are not paying for the feed they consume. While the herd as a whole may pay a profit this profit will come from a few cows in the herd, and the other animals will either barely pay for their keep, or will consume some of the profit from the better animals. The majority of the herds in the State have individuals that could be sold for beef, and leave a herd that would pay a greater profit on the food consumed, although with a smaller number of animals. This has been the history of every herd where a system of herd records has been introduced. The writer has yet to hear of a solitary case where the owners have adopted such a system, and have not found cows that they were keeping at a loss.

There are so many ways that suspicion may be allayed as to the true value of a cow. For instance, many dairymen think that because an animal has a strong strain of Jersey, or other dairy blood, they are almost of necessity profitable dairy animals. The truth is that many of the most worthless animals from a dairy, or any other standpoint, are found among the full-blooded animals of all dairy breeds. We have had at this Station a number of Jersey cows that would not pay for the feed they consumed, while in the next stalls stood cows that were of common or scrub blood, and on the same feed paid exceedingly well. It is naturally supposed that the daughters of a good mother should be profitable animals, especially if the sire is of good blood. The Jerseys just mentioned as belonging to this Station were in two instances from a cow that would make nearly 400 pounds of butter a year, and the sire was from very good stock. In one of the counties of this State is a herd of grade Jerseys that will average very nearly 350 pounds of butter each year. Pedigreed Jersey bulls of good stock have always been used at the head of this herd, and yet, until the bull now owned on the farm was purchased, every heifer raised was found to be unprofitable. This is one of the farms in the State where a complete system of records is kept, and by weeding out the inferior animals, the herd was made very profitable, and was kept so.

Another chance for error in estimating the value of a cow is due to the fact that individuals vary considerably in the length of the lactation period. The cow that will give only twenty pounds of milk a day when she is fresh would be considered a rather poor cow, but if she will give this amount every day for 300 days it would be a total of 6.000 pounds, which is an amount that not one dairy cow in twenty in this State will produce, and which is a very good record, indeed. On the other hand, if a cow gave forty pounds a day when she was fresh the owner would naturally jump at the conclusion that she was a valuable animal without reference to the length of time she might give milk. The fact that a cow gives a large quantity of milk when fresh is no evidence that she will give a large yearly product. Such cows frequently commence to fall off very rapidly after the end of the first or second month, and at the end of the sixth month will be dry. Where this is the case the yearly product is very likely to be below a profitable limit. This Station owned such a cow. She gave a very large flow of milk for the first month, and made an exceptionally good butter record for the month, but she was dry at the end of six months, and her yearly record, owing to this fact, showed very poorly. She was the only cow owned by the Station, and purchased from outside sources, which failed to respond to our conditions and make a profitable animal. And yet she was just such a cow as many dairymen would call a first-class animal. On the other hand the Station owns a couple of animals that will give practically as much milk the tenth month of the lactation period as the first month, and while they never give a very large flow of milk, the fact that they stick to it for a long time makes them valuable.

But in addition to the keeping of a milk record the dairyman must know the per cent of fat in the milk, as well as how much milk the cow produces. Everyone who has taken care of milk in the old-fashioned way knows by the thickness of the cream that some cows give much richer milk than others. The best city dairymen are adopting the system of paying for the milk on the basis of the fat test, or the amount of fat contained in the milk. Creameries have long bought milk on this basis. The amount of butter that a certain quantity of milk will produce depends entirely on the per cent of fat in the milk. Where only one or two cows are kept for family use it is possible to tell about how much butter a cow produces. But with a dairy of several cows, and where the milk is sold, it is impossible to tell which cow is producing rich milk, and which poor milk. Some men think that they can tell by the appearance of milk whether or not it is rich or poor in butter fat. Within wide limits this is so; but the yellowish color often attributed to the quality of the milk is more often due to the color of the butter fat. The Guernsey breed is famous for the yellow butter it produces. The yellow fat in Guernsey butter gives a decidedly yellowish cast to the milk, and it may well happen that the milk from a Guernsey cow containing only four per cent of fat may look richer than the milk from some other breed containing six per cent of fat. What is true of breeds is also true of individuals, and it is impossible to form a very close estimate of the richness of the milk by its appearance.

Cows vary in their fat test from a little less than three per cent to a little more than six per cent. A cow giving 6,000 pounds of three-per cent milk is no better than a cow giving but 3,000 pounds per year, but testing six per cent, and neither is worth keeping. Taking the fact of the variation in the per cent of fat in the milk in connection with the variation in the amount of milk produced, and the dairy farmer has a problem concerning the actual value of the cow in question that can not be solved without some systematic work. When neither the amount of milk, nor the per cent of fat, is known, the cow is an extremely suspicious character. How this works out in practice has been demonstrated at this Station, and could likely find good illustrations in every herd in the State. One cow owned by the Station never gave more than about fifteen pounds in any one day of her life, but she gave practically the same amount every day in the year, and as this milk gave an average yearly test of more than six per cent it can be figured that she paid for her board, with considerable to spare. On the other hand, the cow already mentioned, gave a large quantity of milk to start with, but went off in her milk very quickly, and at the same time tested below four per cent. Between these two extremes are all sorts of variations and combinations that make it impossible to make an approximate guess at the value of a cow. In view of these facts, what a simple business proposition it is to know what each cow is doing for her owner, and thus prevent any possibility of loss!

Did the keeping of herd records involve any great amount of expense or labor some excuse might be offered for not undertaking the task; but such is not the case. The actual labor required is very little; in fact, is hardly worth mentioning, considering the results to be obtained. It is very doubtful if there be a herd of cows in Maryland where records are not already kept, where the following of this plan will not, in a single year, pay many times over for all the apparatus and time required by indicating cows that are not paying for their feed.

Keeping Milk Records.

The necessary apparatus for keeping a milk record of the amount of milk produced by a cow is a scales for weighing the milk and a ruled sheet of paper on which to enter the weights of the single milkings, called a milk sheet.

There are a number of kinds of scales and balances used. A popular kind has a small platform on which to set the bucket of milk, and the weight is indicated on a dial. An ordinary platform scales of small size, and balanced to the weight of the bucket, so that the weight of the milk can be determined directly, may be used for this purpose, though it has disadvantages in the fact that it would take some time to determine the weight, while a balance with a dial points directly to the weight. A kind that has been advertised extensively has an ordinary coil spring, such as is found in the common spring balances. A sheet of paper containing the numbers of the cows each in a separate column is placed in a holder attached to the scales. The bucket containing the milk is placed on a hook, and this pulls down a row of buttons and points corresponding to the numbers of the cows. The button is pressed, and this perforates the paper at the weight of the milk in the bucket. The writer has seen a number of these in use, but has never yet seen one that did satisfactory work.

The balance in use at this Station is a regular spring balance, with a dial graduated to tenth pounds. The hand in the dial can be adjusted so that the weight of the bucket will point the hand to the zero mark. This allows a direct reading of the weight of the milk. As all buckets used weigh the same the work involved in weighing is very small; in fact, is simply a question of seconds. The balance hangs on a hook which projects far enough from the wall to allow the bucket to swing freely, and is placed handy for the milker. The milk sheet is on the wall by the side of the balance. A man accustomed to this work, and with a fair amount of intelligence, will do the entire operation in a few seconds. The requisites of good scales are that, it weigh accurately, and be sensitive to tenth pounds, that it be simple to handle, and that it require as little time as possible for the weighing. The platform scales, with a dial and adjustable hands and the balance used at this Station fills these requirements, and are to be recommended. Some scales used are graduated to ounces, but this causes a great amount of extra and useless work in adding records without any compensating advantages.

The method for keeping an exact record of the amount of milk produced by a cow is to weigh the milk at each milking for the entire lactation period, and enter the amount on a monthly milk sheet. Such a milk sheet will require a separate column for each cow, and will require a blank space in the column for each milking for a month.

The following is the style for such sheet:

Milk Record for Month of........................190

Date		Cow No.	Cow No.	Cow No.	Cow No.	Cow No.	Cow No.	Cow No.	Cow No.	Cow No.	Cow No.	Cow No.	Cow No.	Cow No.	Cow No.
1	A.M.														
	P.M.														
2	A.M.														
	P.M.														
3	A.M.														
	P.M.														
4	A.M.														
	P.M.														
5	A.M.														
	P.M.														
6	A.M.														
	P.M.														
7	A.M.														
	P.M.														
8	A.M.														
	P.M.														
9	A.M.														
	P.M.														
10	A.M.														
	P.M.														

The foregoing record can be extended to take in as many cows as desired. It will be found, however, that when more than about fifteen are provided for on one sheet it becomes rather unwieldy in size. It will, of course, be recognized that instead of having the cows numbered the name of the animal can be entered at the head of the column. It is quite necessary in keeping any system of records that the milk be weighed both morning and evening, as on the great majority of farms the periods between milking are very unequal, thus making the quantities given at the two milkings unequal. Even where the periods are equal the cow will seldom give exactly the same quantity at the two milkings. Were the milk to be weighed but once a day there would be a tendency to weigh at the milking that the largest quantity was given. Farmers are prone to cheat themselves in this way, and this is a case where cheating is likely to result in an actual loss of dollars.

The sample monthly record given would require a new sheet every month, and some provision should be made for copying and preserving the totals, so that in case the daily record was lost the figures of the total yield would be preserved. In fact, there are few conditions, except at experiment stations, where it would be desirable to preserve the monthly milk sheets, as the monthly total would show all that any farmer would care to know or refer to.

There are a number of ways in which the monthly totals can be preserved. The regular herd books on the market for this purpose devote two pages to each individual, giving sufficient space for all data in regard to the animal for a number of years. On the first page is a blank form, on which to enter the detailed pedigree of the cow. Below this form is an elaborate scheme for entering the data for breeding, calculated date of calving, actual date of calving, sex of calf, and a column to note the final disposition of the calf. On the record page is a number of blank forms, each for one year, and containing separate columns for the monthly yield of milk, monthly fat test, butter fat and estimated yield of butter. These herd books are very nice for one who feels that he can stand the expense; but there is a great deal of space that would not be used for an ordinary dairy herd, and a blank book, containing enough space for all the necessary data for a number of years could be purchased for fifty cents, at the most. This book could be ruled off to suit the desires of the owner.

On the following page is given a satisfactory scheme for keeping yearly records:

Herd Record for Year of 190..........

Cow No. 1			Cow No			Cow No.			Cow No.			Cow No.			Cow No.		
Month	Milk Lbs.	Test	Month	Milk Lbs.	Test	Month	Milk Lbs.	Test	Month	Milk Lbs.	Test	Month	Milk Lbs.	Test	Month	Milk Lbs.	Test
Total Milk																	
Estimated Butter																	

The sample yearly record is not given as the best possible, or even suitable for all conditions; but it does show how simple such a record can be, and how easily it can be placed in a blank book of almost any description. The necessary ruling for a large herd can be done in an hour's time.

In the sample given it is intended that all of the cows be placed together on the same or adjoining pages for the same year. The record for each cow is supposed to commence the month that she drops her calf, and it is not at all necessary that the first blank space in each record be filled with the product of January, or any other particular month of the year. Thus, for instance, if the year is 1904, Cow No. 1 may drop her calf in March, and the record could commence in the first blank space at the top of the column, giving March as the month. Cow No. 2 may not drop her calf until August, and this month would be entered in the first blank space at the top of the column, putting the month of August parallel with March, in the record of Cow No. 1. Instead of having the yearly record a record of the performance of each cow from January 1st to December 31st, it is, in reality, the record for a full lactation period of every cow that drops her calf in the year given at the head of the page. A good number of the records will necessarily extend into the following year. In this, blank space is allowed for twelve months only. There isn't any doubt but that this will suffice for most cows, and as dairy cows are supposed to drop calves every twelve months at least, this is the length of time on which the value of the animal should be calculated. If the cow ran over the twelve months, as some will when they fail to get with calf, the record should be continued into the next year, making note of the fact at the head of the column.

Some dairymen naturally want a scheme for keeping track of the amount of milk produced by a cow without some work—one that will not require so much time and trouble, as where the milk is weighed and recorded every night and morning. A very satisfactory and fairly accurate substitute for this method can be found in weighing the milk once a week, or rather one day in the week, night and morning, Saturday or Monday being the day that will be usually selected, for obvious reasons. By getting the sum of the quantities of milk given every weigh day for the year, and multiplying by seven, the number of days in the week, the amount will be sufficiently accurate for all practical purposes in estimating the value of the cow. This scheme for keeping records is to be recommended to dairymen who feel that for different reasons the weighing of the milk every night and morning in the year is impractical, and there are doubtless many for whom this is true. The blanks to be used for weekly weighings will necessarily be somewhat different from the monthly milk sheets, as no monthly record will be practical with this system.

Two methods by which the records of the weekly weighings could be kept are available. In one a milk sheet, much like the one used in making daily weighings, could be employed. This sheet could be headed so as to give the date of the first weighing and last weighing entered on the sheet. In the same column of the monthly milk sheet the figures should be left out, and more space would be necessarily needed for the month and date of the week weighing to be entered. The A. M. and P. M. would need to remain as given. This form of sheet could be extended to cover as many cows, and as many weeks, as desired; but there are two difficulties standing in the road of extending this over too many weighings. One is that a milk sheet becomes filthy and illegible from too long use. The other difficulty applies to the monthly sheet, as well as the long weekly sheet. Where such a long column of figures are to be added it requires a practical hand to do the work correctly, though it appears a very simple proposition. In the case of the monthly record the mistake might not be serious, but were this mistake to be multiplied by seven, as would be the case with the weekly weighings, the mistake would likely become a very serious matter. For these various reasons it would likely be better to limit the weekly milk sheets to ten weeks at the most.

Where the sheets for weekly weighings are intended for an indefinite time it would be necessary that each one be preserved until the end of the lactation periods, when the totals could be added up, or the totals of each one, as it was added, could be placed in a yearly record book for this purpose. This record book should give space in its date column for entering the dates of the first and last weighings entered on the sheet.

COWS AND THE DAIRY.

C. H. Werder, Before Buena Vista County Farmers' Institute.

It is a proven fact that no branch of agriculture affords as large and sure returns as a properly managed dairy. It is also a fact that a large percentage of our dairies do not pay as well as they should, which leads to the conclusion that there must be something wrong, and that is a fact. Reforms are needed all along the line in the dairy business and the initial reform must be with the man behind the cow and with him must reform his co-worker, the city, county and state. The dairy business is the one big industry which as yet belongs to the farmers, the one they can control if they want to. Butter and milk prices are yet governed by supply and demand and not by a trust, although powers are at work to pipe-line the business. The main object of this paper is to deal with conditions at home, in this county and state and will tackle first the dairyman, or, to be more correct, the farmer with cows. Every farmers should be a dairyman and make dairying the main issue. He should keep all the cows he, with the help of his own family, can milk. More cows and less land are the surest, if not the quickest, road to independence. To be a successful dairy farmer he must first of all have a natural fondness for cows; he must have good judgment in selecting, breeding, feeding and caring; in short, he must know something about the business. This knowledge is easily acquired by reading books treating on this subject, also by reading such dairy papers as are written by practical and experienced dairymen, and, needless to say, the knowledge acquired must be put into practice wherever possible.

For the dairy farmer, the distinct dairy cow is the only cow to keep; a beef cow is not in the milk business, nor is the dual purpose cow a profitable animal; but worst of all cows is the poor dairy cow; she is the greatest obstacle to profitable dairying. Supposing that the dairy farmer is what he should be, his first step must be to see to it that his cows are what they should be. Any cow making less than 200 pounds of butter per year does not pay for her board and should be sold at once, not to the neighbor but to the butcher; but even 200-pound cows bring small profits and eat as much as a cow giving 300 or 500 pounds of butter and consequently must be reformed. If the farmer does not wish or is not able to buy first-class dairy cows he should at least buy a sire from a herd with a proven record as heavy milkers; several farmers can club together to purchase such an animal and thus improve their herds from year to year. In order to find out the cows which live on the fat of the others it is absolutely necessary to have a testing machine, a spring balance and record-sheet; each cow's milk should be weighed after each milking, a small sample taken and preserved and a record kept. This should be done for three reasons: First, to weed out the poor cows and learn what each cow is doing; second, to know what you are selling; you would not think of selling a pail full of eggs without knowing how many eggs there are, according to your own count, and not the storekeepers, nor should you sell a can of cream without knowing how many pounds of fat there is in it according to your own testing and not the buyer's only; the last, but not the least, reason is that it will make you interested in your cows and the business in general and that it is a long step ahead in successful dairying. I wish to impress upon your mind this matter of weighing, sampling, testing and recording the milk in particular. It may seem to be too much trouble to do this work, but once the habit is acquired, it takes but a few minutes of extra time at each milking. I would suggest a convenient and practical way of doing this work and will be glad to give further advice at any time. The necessary outfit consists of a small testing outfit, a springbalance, a small dipper, as many pint jars as you have cows, and some preservative; the whole will cost about $6 or $7 and will prove a splendid investment. A narrow shelf should be constructed on the wall behind the cows to accommodate the pint jars, a nail on the side of the shelf will support the dipper, the spring balance may be hung on a hook in the ceiling; the testing outfit is best kept at the house. The record sheet can be tacked onto the wall next to the spring balance and when each pint jar is supplied with a tablet of preservative the arrangement is complete. After the milk is drawn, the pail can be hung on the balance and while hanging, a small sample can be taken and put into corresponding jars and the weight put down on the sheet and it is done and only requires a small fraction of a minute. The samples may be tested once in two weeks and, better, every week, and results also recorded.

The milking itself plays an important part in the dairy business; the same person should always milk the same cows and at regular hours, with clean, dry hands and as little noise and fuss as possible; strip out every drop; the first of the milk is nearly all water, the last nearly all fat; keep on stripping a while after you have the last drop; it will produce another extra drop the next time.

The problem of feeding is one that also deserves closer attention; the proper feed is produced on every farm, but the cow, to get what is coming to her, is another question; milch cows must have milk-producing food to do their best; what these feeds are and the amount and proportion to feed is the kind of information you get by reading good dairy papers. It would take too much time to treat here. The care of the dairy herd, especially in winter, is also much neglected. Good, warm and well ventilated stables are essential to the comfort and efficient work of the dairy cows. They will do their best if kept in such stables twenty-three hours out of twenty-four all through the winter, and right here I wish to bring out another point for reform and that point is more winter milking. Other things being equal, the cow that is fresh in September will show up the best results for the year. It is no hardship to milk eight or ten cows in a good stable during the winter, while it is almost impossible to milk during the dog days, and that is the time when the fall freshened cow is dry, besides there is the advantage of better prices. The caring for milk and cream needs reforming very much. Since the introduction of the hand separator we have taken a long, long step backwards in the proper handling of the cows' product, but here the blame has to be shouldered not by the farmer only, but the creamery as well, and the state comes in for a share also. Since on nearly all the farms in this county the cream is sold to creameries, direct and indirect, I will treat this subject only. It seems some of us have wholly lost sight of the fact that cream is intended for human consumption; we find cream everywhere; we find it in the dry goods and grocery stores, among bananas, kerosene, herring and cheese; we find it in the feed store and elevator, keeping company with chickens and ducks, giving out odors and receiving others; we find cream on the depot platforms, some in the cans and some trying to get out; if you slip on the sidewalk the cause is apt to be not the proverbial banana peeling, but spilt cream; we find cream hauled over the country in all directions, some starting from ten miles behind a creamery, passing by that creamery, and landing ten miles further on in town. We see creamery wagons chasing each other over the same roads, passing your gate as frequent and regular as the electric cars on the loop in Chicago. This condition will and must come to an end; the farmers, the creameries, and the state must co-operate to regain the reputation of Iowa butter. The farmers must take better care of their cream and deliver oftener; the time will come when sour and tainted cream will not sell at par with good cream, and while at present you get nothing for extra care and labor, it is best to acquire or stick to the habit, as the case may be, to deliver your cream in the best possible condition.

The creameries, and especially the central plants, and would-be central plants, in their mad chase for business are the chief sinners and reform must come from them. The hand separator has made the central plant possible, but that the central plant is not the proper solution to economy and high quality in buttermaking is evident. Iowa butter has decreased in quality in proportion to the increase in central plants. The hand separator will in time be the blessing it was intended to be and which it can be. So far, it has done the dairy industry of Iowa more harm than good. The co-operative creamery is the institution for the farmer to patronize; it is the institution you have built yourself with your own money; its management is with you, open to your investigation at any time; if properly managed and patronized by all in its territory it can outdo any central plant in the minimum cost of manufacture, in the quality of the butter and prices. There are today in Iowa numbers of highly successful farmers' creameries to one central plant and the one being doubtful. However, many changes must be made in our creameries. The present way of getting cream delivered to the creameries is the worst possible. It has not one good point in its favor; every part of it is to the contrary from what it should be; by this I refer to the custom of having cream gathered by regular haulers with the twenty-gallon cans. It is wrong to have cream hauled over twenty and thirty miles of road in heat and cold; it is wrong to mix all sorts of cream together; it is wrong to take samples with small dippers, without thoroughly mixing the cream, as is usually done; it is wrong to gather cream three times a week in summer and twice in winter. Cream should be delivered daily in summer and every other day in winter, and by the farmers themselves, which is practical if five or six neighbors club together and take turns in hauling, bringing each man's cream in separate cans. This enables the buttermaker to grade the cream and if a difference of four or five cents was made between the best and poorest grade it would not take long to get nothing but good cream, make nothing but good butter, and get nothing but the highest prices. Mistakes and dissatisfaction would be less and easily adjusted at the right place and time and it would give persons engaged in other lines a chance to attend to their own business, and I have no doubt the centralizers could easily invest their money to better advantage.

In conclusion, I would appeal to you to work for a higher knowledge of dairying, work for better cows, co-operate in every way possible, take good care of your dairy and your dairy will take good care of you.

CATTLE FEEDING.

H. L. Leonard, Waukee, Iowa, Before Dallas County Farmers' Institute.

There are many methods of feeding cattle, and as many different ways of handling them. They should be bought from a cent to a cent and a half cheaper than they should sell for after the fattening process is completed. A good plan, and probably the best one, is to buy cattle that will weigh one thousand pounds or better in February and feed about a half feed of corn and all the roughness they will eat, preferably clover hay. Feed in this manner until the grass gets good, say about the fifteenth of May, and then take all the corn off and let them eat grass alone as long as it is good, or until new corn is out of the milk, about the first of September; then begin to cut corn and feed stalk and all on the pasture, letting the hogs and cattle run together and the hogs will keep the cattle from getting too much corn to throw them off their feed.

Plant pumpkins in your corn and as you cut the corn haul a load of pumpkins every day; break them in halves and scatter over the pasture. You will discover that both cattle and hogs will leave the corn to eat the pumpkins, which will so expand their stomachs that they will have a big place to put corn in later, and they will not go off their feed as they would if they had been fed corn alone. Also, the hogs will lose their worms by eating pumpkin seeds, and both cattle and hogs will have their systems cool and ready to eat large quantities of corn later.

As soon as cattle begin to leave stalks, then begin to snap corn and feed in bunks, so that you can tell just how much they are getting, and never let them leave any corn in the troughs after eating one hour. After getting cattle on snapped corn, sprinkle salt all over it. Fifty head of cattle will take a gallon each day. They will eat more corn if salted and you will not need any stock food of any kind, for most of the stock foods are one-third salt. Cattle fed in this manner ought to go on market with a ninety days' feed of corn and be sold before bad weather arrives in December, as you have had the best three months of the year to feed in—September, October and November.

If you have a second crop of clover to put them on, so much the better, provided you are careful to not let them have too much at first and when wet.

A word about pumpkins: I planted thirty-five acres to pumpkins and as I mixed the seed in planter boxes I was afraid afterward I might have a thin stand of corn. Now for the results: I fed a hayrack load of pumpkins a day for a long time, or until they were frozen so hard I could not stick a fork in them; then I quit. I think there are ten more such loads left in the field, but the hogs will eat all that is left. I have fed (without weighing it) of the corn, so that we had about thirty acres husked and put in the crib. I hired it all husked and paid for two thousand four hundred and twenty bushels,—about half at seventy-five pounds, the balance at seventy pounds per bushel, so that you see the pumpkins did not hurt the corn much, but the corn did hurt the pumpkins; it shaded them too much. This is not cattle feeding, but relates to it.

I will close with a few "dont's:"

Don't buy young cattle for short feed.

Don't buy any but high grades of beef breeds.

Don't buy any with horns.

Don't overfeed.

Don't forget the salt; and it is better to sprinkle it over the corn than to put it all in a box by itself. How would you like to eat a meal with no salt in it and then go and eat as much salt as should have been in it? You would not eat as heartily, would you? You would be looking for the salt dish. The victuals would not taste as good without the salt and you would eat less. So would the cattle.

COVERED YARDS FOR COWS.

From the U. S. Department of Agriculture, Farmers' Bulletin No. 244.

In a recent circular of the Illinois station, W. J. Fraser presents the views of a number of practical dairymen who have been in the habit of allowing their cows the freedom of a closed shed or covered barnyard and using the stable only at milking time. The data collected seemed so favorable and the plan so reasonable that the method was put into actual operation at the University of Illinois. Twenty-two cows were cared for in this way in a shed 30 by 68 feet, having mangers on each side and bull pens in two corners, and the results were considered most satisfactory.

From the experience at the university the past two years it has been found that the cows keep much cleaner than when stabled and that the milking stable is in a more sanitary condition; consequently it is easier to produce clean milk. By this method there is less difficulty in providing cows with an abundance of fresh air, and they are more vigorous and healthy and have better appetites than when kept in the stable. Since they can move about and get exercise, they will not suffer in cold weather if the temperature is somewhat lower than in the ordinary stable. Labor is saved, as the shed can be bedded much more easily and quickly than can stalls; there is little stable cleaning to be done, and the manure is hauled directly from the shed to the field at any time most convenient and when least damage is done the land by tramping. Another advantage is the saving of fertility much more completely. Many barns do not have cement floors, and so there is more or less waste to the liquid portion of the manure. Since land is becoming so high-priced no farmer can afford to allow any fertility to be wasted, and by this method all the liquid is saved, as it is absorbed by the bedding. If only enough bedding is used to keep the cows clean they tramp the manure so thoroughly that it does not heat to make the air impure. If manure is hauled directly from the stable to the field there is a considerable portion of the year when it must be allowed to accumulate in the yard, where it will leach badly, or it must be hauled onto the land when it is so wet and soft that much injury is done by tramping; this is especially true on clay soil.

On many dairy farms the question of getting sufficient help is becoming such a problem as to interfere seriously with this branch of agriculture. As it seems to be the opinion of the majority of people who have practiced this method that it saves labor, this is one of the strong points in its favor.

The information at hand is not sufficient from which to draw definite conclusions for all sections of the country and all conditions. The system has been a marked success wherever we can find that it has been tried, and it seems probable that it could be put into practice by many dairymen of the state, greatly to their advantage and to the general improvement of the milk supply.

DIGESTIBLE NUTRIENTS IN FEEDING STUFFS.

Drovers Journal, Chicago, Ill.

The average digestible nutrients and fertilizing constituents in American feeding stuffs are shown in the following table, which is taken from Bulletin No. 128 of the outh Carolina experiment station.

Name of Feed—Concentrates—	Dry matter in 100 lbs. lbs.	Digestible Nutrients in 100 lbs.			Fertilizing Constituents in 1,000 lbs.		
		Protein, lbs.	Carbohydrate, lbs.	Ether extract, lbs	Nitrogen, lbs.	Prosphoric acid, lbs.	Potash, lbs.
Corn, all analyses	89.1	7.9	66.7	4.3	18.2	7.0	4.0
Dent corn	89.4	7.8	66.7	4.3	16.5	----	----
Flint corn	88.7	8.0	66.2	4.3	16.8	----	----
Sweet corn	91.2	8.8	63.7	7.0	18.6	----	----
Corn cob	89.3	0.4	52.5	0.3	5.0	0.6	6.0
Corn and cob meal	84.9	4.4	60.0	2.9	14.1	5.7	4.7
Corn bran	90.9	7.4	59.8	4.6	16.3	12.1	6.3
Gluten meal	91.8	25.8	43.3	11.0	50.3	3.3	0.5
Germ meal	89.6	9.0	61.2	6.2	26.5	8.0	5.0
Starch refuse	91.8	11.4	58.4	6.5	22.4	7.0	5.2
Grano-gluten	94.3	26.7	38.8	12.4	49.8	5.1	1.5
Hominy chops	88.9	7.5	55.2	6.8	16.3	9.8	4.9
Glucose meal	91.9	30.3	35.3	14.5	57.7	----	----
Sugar meal	93.2	18.7	51.7	8.7	36.3	4.1	0.3
Gluten feed	92.2	20.4	48.4	8.8	38.4	4.1	0.3
Wheat	89.5	10.2	69.2	1.7	23.6	7.9	5.0
High-grade flour	87.6	8.9	62.4	0.9	18.9	2.2	1.5
Low-grade flour	87.6	8.2	62.7	0.9	28.9	5.6	3.5
Dark feeding flour	90.3	13.5	61.3	2.0	31.8	21.4	10.9
Wheat bran	88.1	12.2	39.2	2.7	26.7	28.9	16.1
Wheat bran, spring wheat	88.5	12.9	40.1	3.4	----	----	----
Wheat bran, winter wheat	87.7	12.3	37.1	2.6	----	----	----
Wheat shorts	88.2	12.2	50.0	3.8	28.2	13.5	5.9
Wheat middlings	87.9	12.8	53.0	3.4	26.3	9.5	6.3
Wheat screenings	88.4	9.8	51.0	2.2	24.4	11.7	8.4
Rye	88.4	9.9	67.6	1.1	17.6	8.2	5.4
Rye bran	88.4	11.5	50.3	2.0	23.2	22.8	14.0
Rye shorts	90.7	11.9	45.1	1.6	18.4	12.6	8.1
Barley	89.1	8.7	65.6	1.6	15.1	7.9	4.8
Malt sprouts	89.8	18.6	37.1	1.7	35.3	14.3	16.3
Brewers' grains, wet	24.3	3.9	9.3	1.4	8.9	3.1	0.5
Brewers' grains, dried	91.8	15.7	36.3	5.1	36.2	10.3	0.9
Oats	89.0	9.2	47.3	4.2	20.6	8.2	6.2
Oat meal	92.1	11.5	52.1	5.9	23.5	----	----
Oat feed or shorts	92.3	12.5	46.9	2.8	17.2	9.1	5.3
Oat dust	93.5	8.9	38.4	5.1	21.6	----	----
Oat hulls	90.6	1.3	40.1	0.6	5.2	2.4	5.2
Rice	87.6	4.8	72.2	0.3	10.8	1.8	0.9
Rice hulls	91.8	1.6	44.5	0.6	5.8	1.7	1.4
Rice bran	90.3	5.3	45.1	7.3	7.1	2.9	2.4
Rice polish	90.0	9.0	56.4	6.5	19.7	25.7	7.1
Buckwheat	87.4	7.7	49.2	1.8	14.4	4.4	2.1
Buckwheat hulls	86.8	2.1	27.9	0.6	4.9	0.7	5.2
Buckwheat bran	89.5	7.4	30.4	1.9	36.4	17.8	12.8
Buckwheat shorts	88.9	21.1	33.5	5.5	----	----	----
Buckwheat middlings	87.3	22.0	33.4	5.4	42.8	21.9	11.4
Sorghum seed	87.2	7.0	52.1	3.1	14.8	8.1	4.2
Broomcorn seed	85.9	7.4	48.3	2.9	16.3	----	----
Kaffir corn	84.8	7.8	57.1	2.7	----	----	----

DIGESTIBLE NUTRIENTS IN FEEDING STUFFS—CONTINUED.

Name of Feed—Concentrates—	Dry matter in 100 lbs. lbs.	Digestible Nutrients in 100 lbs.			Fertilizing Constituents in 1,000 lbs.		
		Protien, lbs.	Carbohydrate, lbs.	Ether extract, lbs	Nitrogen, lbs.	Prosphoric acid, lbs.	Potash, lbs.
Millet	86.0	8.9	45.0	3.2	20.4	8.5	3.6
Flax seed	90.8	20.6	17.1	29.0	36.1	13.9	10.3
Linseed meal, old process	90.8	29.3	32.7	7.0	54.3	16.6	13.7
Linseed meal, new process	89.9	28.2	40.1	2.8	57.8	18.3	13.9
Cotton seed	89.7	12.5	30.1	17.3	31.3	12.7	11.7
Cotton seed meal	91.8	37.2	16.9	12.2	67.9	28.8	8.7
Cotton seed hulls	88.9	0.3	33.1	1.7	6.9	2.5	10.2
Cocoanut meal	39.7	15.6	38.3	10.5	32.8	16.0	24.0
Palm nut meal	89.6	16.0	52.6	9.0	26.9	11.0	5.0
Sunflower seed	92.5	12.1	20.8	29.0	22.8	12.2	5.6
Sunflower seed cakes	91.8	31.2	19.6	12.8	55.5	21.5	11.7
Peanut meal	89.3	42.9	22.8	6.9	75.6	13.1	15.0
Rape seed meal	90.0	25.2	23.7	7.5	49.6	20.0	13.0
Peas	89.5	16.8	51.8	0.7	30.8	8.2	9.9
Soja (soy) bean	89.2	29.6	22.3	14.4	53.0	18.7	19.0
Cow pea	85.2	18.3	54.2	1.1	33.3	----	----
Horse bean	85.7	22.4	49.3	1.2	40.7	12.0	12.9
Roughage—Fodder Corn.							
Fodder corn, green	20.7	1.0	11.6	0.4	4.1	1.5	3.3
Fodder corn, field cured	57.8	2.5	34.6	1.2	17.6	5.4	8.9
Corn stover, field cured	59.5	1.7	32.4	0.7	10.4	2.9	14.0
Fresh Grass—							
Pasture grasses (mixed)	20.0	2.5	10.2	0.5	9.1	2.3	7.5
Kentucky blue-grass	34.9	3.0	19.8	0.8	----	----	----
Timothy, different stages	38.4	1.2	19.1	0.6	4.8	2.6	7.6
Orchard grass, in bloom	27.0	1.5	11.4	0.5	4.3	1.6	7.6
Redtop in bloom	34.7	2.1	21.2	0.6	----	----	----
Oat fodder	37.8	2.6	18.9	1.0	4.9	1.3	3.8
Rye fodder	23.4	2.1	14.1	0.4	3.3	1.5	7.3
Sorghum	20.6	0.6	12.2	0.4	2.3	0.9	2.3
Meadow fescue, in bloom	30.1	1.5	16.8	0.4	----	----	---
Hungarian grass	28.9	2.0	16.0	0.4	3.9	1.6	5.5
Green barley	21.0	1.9	10.2	0.4	----	----	----
Peas and oats	16.0	1.8	7.1	0.2	----	----	----
Peas and barley	16.0	1.7	7.2	0.2	----	----	----
Hay—							
Timothy hay	86.8	2.8	43.4	1.4	12.6	5.3	9.0
Orchard grass	90.1	4.9	42.3	1.4	13.1	4.1	18.8
Redtop	91.1	4.8	46.9	1.0	11.5	3.6	10.6
Kentucky blue-grass	78.8	4.8	37.8	2.0	11.9	4.0	15.7
Hungarian grass	92.3	4.5	51.7	1.3	12.0	3.5	13.0
Mixed grasses	87.1	5.9	40.9	1.2	14.1	2.7	15.9
Rowen (mixed)	83.4	7.9	40.1	1.5	16.1	4.3	14.9
Meadow fescue	80.0	4.2	43.3	1.7	9.9	4.0	21.0
Soy bean hay	88.7	10.8	38.7	1.5	23.2	6.7	10.8
Oat hay	91.1	4.3	46.4	1.5	----	----	----
Marsh or swamp hay	88.4	2.4	29.9	0.9	----	----	----
Marsh or swamp hay	92.1	3.5	44.7	0.7	----	----	----
White daisy	85.0	3.8	40.7	1.2	----	----	----
Straw—							
Wheat	90.4	0.4	36.3	0.4	5.9	1.2	5.1
Rye	92.9	0.6	40.6	0.4	4.6	2.8	7.9
Oat	90.8	1.2	38.6	0.8	6.2	2.0	12.4
Barley	85.8	0.7	41.2	0.6	13.1	3.0	20.9
Wheat chaff	85.7	0.3	23.2	0.5	7.9	7.0	4.2
Oat chaff	85.7	1.5	33.0	0.7	----	----	----

DIGESTIBLE NUTRIENTS IN FEEDIND STUFFS—CONTINUED.

Name of Feed—Concentrates—	Dry matter in 100 lbs. lbs.	Digestible Nutrients in 100 lbs.			Fertilizing Constituents in 1,000 lbs.		
		Protein, lbs.	Carbohydrate, lbs.	Ether extract, lbs	Nitrogen, lbs.	Prosphoric acid, lbs.	Potash, lbs.
Fresh Legumes—							
Red clover, different stages	29.2	2.9	14.8	0.7	5.3	1.3	4.6
Alsike, bloom	25.2	2.7	13.1	0.6	4.4	1.1	2.0
Crimson clover	19.1	2.4	9.1	0.5	4.3	1.3	4.9
Alfalfa	28.2	3.9	12.7	0.5	7.2	1.3	5.6
Cow pea	16.4	1.8	8.7	0.2	2.7	1.0	3.1
Soy bean	24.9	3.2	11.0	0.5	2.9	1.5	5.3
Legume Hay and Straw—							
Red clover, medium	84.7	6.8	35.8	1.7	20.7	3.8	22.0
Red clover, mammoth	78.8	5.7	32.0	1.9	22.3	5.5	12.2
Alsike clover	90.3	8.4	42.5	1.5	23.4	6.7	22.3
White clover	90.3	11.5	42.2	1.5	27.5	5.2	18.1
Crimson clover	90.4	10.5	34.9	1.2	20.5	4.0	13.1
Alfalfa	91.6	11.0	39.6	1.2	21.9	5.1	16.8
Cow pea	89.3	10.8	38.6	1.1	19.5	5.2	14.7
Soy bean straw	89.9	2.3	40.0	1.0	17.5	4.0	13.2
Pea-vine straw	86.4	4.3	32.3	0.8	14.3	3.5	10.2
Silage—							
Corn	20.9	0.9	11.3	0.7	2.8	1.1	3.7
Clover	28.0	2.0	13.5	1.0	----	----	----
Sorghum	23.9	0.6	14.9	0.2	----	----	----
Alfalfa	27.5	3.0	8.5	1.9	----	----	----
Grass	32.0	1.9	13.4	1.6	----	----	----
Cow pea vine	20.7	1.5	8.6	0.9	----	----	----
Soy bean	25.8	2.7	8.7	1.3	----	----	----
Barnyard millet and soy bean	21.0	1.6	9.2	0.7	----	----	----
Corn and soy bean	24.0	1.6	13.0	0.7	----	----	----
Roots and Tubers—							
Potato	21.1	0.9	16.3	0.1	3.2	2.2	4.6
Beet, common	13.0	1.2	8.8	0.1	2.4	0.9	4.4
Beet, sugar	13.5	1.1	10.2	0.1	2.2	1.0	4.8
Beet, mangel	9.1	1.1	5.4	0.1	1.9	0.9	3.8
Flat turnip	9.5	1.0	7.2	0.2	1.8	1.0	3.9
Rutabaga	11.4	1.0	8.1	0.2	1.9	1.2	4.9
Carrot	11.4	0.8	7.8	0.2	1.5	0.9	5.1
Parsnip	11.7	1.6	11.2	0.2	1.8	2.0	4.4
Artichoke	20.0	2.0	16.8	0.2	2.6	1.4	4.7
Miscellaneous—							
Cabbage	15.3	1.8	8.2	0.4	3.8	1.1	4.3
Spurry	20.0	1.5	9.8	0.3	3.8	2.5	5.9
Sugar beet leaves	12.0	1.7	4.6	0.2	4.1	1.5	6.2
Pumpkin, field	9.1	1.0	5.8	0.3	----	----	----
Pumpkin, garden	19.2	1.4	8.3	0.8	1.1	1.6	0.9
Prickly comfrey	11.6	1.4	4.6	0.2	4.2	1.1	7.5
Rape	14.0	1.5	8.1	0.2	4.5	1.5	3,6
Acorns, fresh	44.7	2.1	34.4	1.7	----	----	----
Dried blood	91.5	52.3	.0	2.5	135.0	13.5	7.7
Meat scrap	89.3	66.2	.3	13.7	113.9	7.0	1.0
Dried fish	89.2	0.6	7.3	----	1.4	0.2	0.4
Beet pulp	10.2	44.1	.0	10.3	77.5	120.0	2.0
Beet molasses	79.2	9.1	59.5	.0	14.6	0.5	56.3
Cow's milk	12.8	3.6	4.9	3.7	5.3	1.9	1.8
Cow's milk, colostrum	25.4	17.6	2.7	3.6	28.2	6.6	1.1
Skim milk, gravity	9.6	3.1	4.7	0.8	5.6	2.0	1.9
Skim milk, centrifugal	9.4	2.9	5.2	0.3	5.6	2.0	1.9
Buttermilk	9.9	3.9	4.0	1.1	4.8	1.7	1.6
Whey	6.6	0.8	4.7	0.3	1.5	1.4	1.8

SWINE RAISING AND FEEDING WITH SPECIAL REFERENCE TO THE USE OF CLOVER AND OTHER FOODS THAN CORN.

J. W. Forney, Winterset, Iowa, Before Madison County Farmers' Institute.

Some men say a clover field is of little value for a hog pasture; others say an acre of clover is worth as much as the corn that will grow on an equal amount of land. I say a man who will not provide a clover field for his hogs had better quit the hog business and interest himself in producing grain and selling it to his neighbor who does.

Every acre of clover is worth as much as corn from two acres.

To produce pork at the least possible expense, a man's greatest need (after he has gone to the necessary expense of wintering a number of brood sows or stock hogs) is a bluegrass pasture. This will furnish the necessary green food your hogs are so much in need of till your clover can be used. A rye pasture early in the spring is also excellent for hogs of all ages.

There can be quite a saving in the amount of corn fed after the hogs have access to these pastures. When the clover field is ready for pasturage, the ground which was in rye can be plowed and planted to corn or other crops, or left to mature a crop of rye. So you are not put to any expense for rye pasture, except about fifty cents per acre for your seed.

To get the best results from efforts to produce pork from clover and grasses, you will need a bunch of healthy hogs of good grade and a good clover field. The hog, being a subject of itself, I shall proceed at once to the care of the clover field. If you have your field poorly seeded, you will not get more than half the feed from it that you would if you have it properly seeded. If you neglect your clover at the right time, you will get only three months' pasture when you could have had six. The last clover field I allowed my hogs to "hog down" was "all in" by the fifteenth of July. There was not enough pasture on that field to supply two hogs per acre after that time.

If you allow your clover to mature and be trampled down by a lot of hogs that are trying to get the last blossom, it will smother and die in the early part of July and you simply have a lot of dead clover stems lying on the ground for a hog pasture.

Do not allow your hogs to have the run of a large clover field, when you only have hogs enough for a small portion of it. Fence off what you need for a pasture and leave the rest for hay. One acre of well seeded clover is sufficient for ten or twelve hogs wighing from one to two hundred pounds.

Do not allow the clover in the hog pasture to "head out" at any time during the season. About the tenth of May go into the pasture with a mowing machine and mow one-third of it. Set the machine a little high; next week mow another third, and the next week do likewise. When you mow any part of this pasture, if there is any danger of it smothering the growing clover you must take it off the ground. While the clover is growing up on one of these thirds, the hogs have excellent pasture on the other part of the field. If you will pursue this course, you will have excellent green food for your hogs till the first of October and some years, later. These remarks are applicable to the second year of a clover crop's life.

Do not allow your hogs to run on a new crop of clover later than the first of October, for they will injure the young clover, even if you have them properly ringed. They have a way of getting the clover out of the ground with their lower jaw, usually breaking the root off about an inch below the surface and eating both root and top.

We will now consider the proper course to proceed to get the hogs to consume this clover. Any hog will eat some clover early in the spring, but to get them to eat a quantity of it every day through the entire summer is a different proposition. If your hogs have been kept in a dry lot, it is not best to turn them on the clover for three or four days until noon, if there is much dew. When the pasture is good and the days begin to get warm, quit feeding corn in the feed lots, but take the corn and hogs out in the clover field and feed them there. I prefer feeding shelled corn in the pasture, as they will not chase each other through the clover after an ear of corn. I always feed the corn to the hogs on the side of the field farthest from the water. After they have finished their little lunch of corn, they begin to eat clover, gradually working across the field to the water, eating all the way. At ten o'clock every hof will be at the water and in the shade. About two P. M. they will take a fresh wallow and then take a short trip in the clover for their dinner. About four P.M. every hog will go into the clover field to get their supper and will be there at sundown, converting clover into pork to the best of their ability. This is no dream or air-castle, but actual facts. Do not feed more than two ears of corn per head once a day and feed this in the morning, in the field as above stated. If you feed heavily of corn they will eat but little clover.

Several years ago, I had seventy head of stock hogs I had wintered. I put them on a good clover pasture, and from the fifteenth of May until the last of July, I fed those hogs just one-half bushel of shelled corn per day. They had no slop but plenty of good water to drink and plenty to wallow in. These hogs would weigh about one hundred and thirty pounds when I put them on the clover the latter part of April and they were only in fair stock hog order then. About the first of July one of my neighbors called and we walked out to see the hogs in the clover field. After we looked at them, he said: "Why, Joe, these hogs are fat enough to butcher." That was putting it a little too strong, as they were not more than half fat, but growing every day and keeping in good flesh. This is what I call producing pork at the least possible expense for corn, etc. It is nothing to be ashamed of to take a bunch of hogs worth from $1,000 to $1,500 to the far side of the clover field early in the morning to give them an opportunity to begin the daily increase of your bank account of from $7 to $15, at a cash outlay for grain and mill feed of only $2 or $3.

It is very necessary to provide a place for them to wallow and get cool, or they will not return to the field until they are starved to it. Good drinking water is also necessary. If you will give them about one gallon each of pretty good slop before taking them to the field, you will be amply repaid for labor and mill feed. Do not feed them anything at night, but leave them in the clover field to come in at their pleasure. Many of them will be in the field sampling the three and four leaf clovers, while the whippoorwill's song is being sung.

I will now give you the results obtained in feeding two bunches of hogs in Ohio in the seventies:

A gentleman living about four miles from our place fatted a car load of hogs. He had a fine clover field adjoining his feed lot and after his hogs were fatted, he said to me: "I would not give three strains for a clover field for a hog pasture. "Why," said he, "they would not even go out to look at the clover." Now, he owned a good farm, and besides directing the work on this farm he was the principal stock buyer and shipper in that part of the country. I mention this, that you may know he was a man of average ability. You ask, "Why did this man fail to be benefited by his fine clover field?" The answer is, he pursued the wrong method. These hogs would weigh one hundred and thirty pounds the first of May,. He had good shade and water in the feed lot, had plenty of corn and was a liberal feeder. They would eat their corn in the morning, take a drink and lie down. Why should they go for a feed of clover when they already had a liberal breakfast of corn? He fed them at noon and they would do as they did in the morning and the same in the evening. When these hogs were fatted, he just had little fat hogs. They had been grown and fatted principally on corn at a cost equal to what they sold for on the market.

Now I wish to show the results obtained by feeding another bunch of hogs in the same township; also the method pursued. In the spring of 1870, on my father's farm, was a fine twenty-acre clover field and a bunch of fall pigs which had wintered fairly well. There were about thirty-five of them and their weight was close to one hundred thirty-five pounds. About the twenty-fifth of April, these hogs were turned into this field of clover. There was some other stock in this field, principally horses. The water and shade, which were excellent, were on the north side of this field. As we went to our work each morning we passed the south side of this field and we would take a part of the barrel of slop and not to exceed two ears of corn apiece for the hogs. (The slop and corn were placed on a sled and drawn by one horse.) We would feed them at the southwest corner of the field and as soon as they finished their little lunch they would commence to eat clover and advance toward the water on the north side of the field. When we came home to dinner, there was not a hog to be seen. When we came home from our work in the evening, every hog would be out getting his supper. Every morning, those hogs were near the south side of the field ready for their little drink of slop and two ears of corn. If we were a little late in going to our work some mornings, they would be a short distance from the feeding place eating clover for "dear life." The way these hogs grew was a surprise to us all. About the fifteenth of August, we began to feed a little more corn. Near the first of September they were placed in a small lot having plenty of shade and running water and given all the corn they would eat for seven weeks. They took on flesh rapidly. Just then the Franco-Prussian war broke out and the price of fat hogs came up, and father sold those hogs for the modest sum of nine dollars per hundred and delivered them at the scales on his farm. A number of these hogs weighed more than four hundred and fifty pounds. The entire lot averaged better than four hundred pounds. Besides the corn raised on the place in 1869, there was a crib of eight hundred bushels that father had purchased at the rate of three bushels for one dollar. When you have time you can figure up the profit on the grain fed to these hogs. The same results can be obtained in Iowa. Those hogs did not need more than four acres of that clover. There was enough in that field for two hundred head of hogs.

The above facts and others I am cognizant of leads me to say that when the farmers of Iowa adopt this better method of feeding and caring for their hogs they will realize that in the year of 1907 swine raising in Iowa was only in its infancy.

PROFITS FROM SPRAYING POTATOES.

From U. S. Department of Agriculture, Farmers' Bulletin No. 251.

The profitableness of thorough spraying to protect potatoes against fungus diseases and insect enemies was very strikingly shown in experiments reported by F. C. Stewart and associates, of the New York State Station. The experiments have been made under the direct supervision of the station or in co-operation with growers in different parts of the state. In general thorough spraying with Bordeaux mixture was very effective against blight, rot, and flea-beetle.

While in a few cases all loss from these causes could not be prevented even by thorough spraying, in every case where there was a severe outbreak of blight enough good was done to repay all expenditure, both of money and of time. Generally, spraying was very profitable. Of those whose tests were reported to the station, thirty growers made a net profit of $10,000 from spraying.

In fourteen co-operative experiments, covering 180 acres, made in 1904, the average increase in yield due to spraying was 62¼ bushels per acre; the cost of spraying was $4.98 per acre; the cost per acre for each spraying, 93 cents; and the net profit per acre, $24.86. Similar and almost equally profitable results were obtained in six experiments made in 1903.

Not only were there gains in yield due mainly "to lengthening the time of growth by preventing foliage destruction by late blight," but the sprayed potatoes, being more mature, were of better cooking quality.

Chemical analysis showed about one-sixteenth more dry matter in the sprayed potatoes and one-ninth more starch. Cooking tests confirmed the analyses, as the sprayed potatoes were noticeably more mealy than those not sprayed, and were pronounced of much better quality by all who ate both.

The mixture recommended by the station is Bordeaux of the 1-to-8 formula; that is, 6 pounds of copper sulphate to 50 gallons of water, the acid of the sulphate being neutralized by about 4 pounds of good stone lime. * * * Paris green may be safely added to thoroughly neutralized Bordeaux (mixture and) this combination—Bordeaux and an arsenical poison—has given better results in station tests than any other fungicide-insecticide treatment for potato pests. * * *

If thorough spraying is the object, it would be best to begin when the plants are six or seven inches high and to spray every ten days or two weeks as long as the plants remain green. If rain comes before any application is dry on the vines the treatment should be repeated, but spraying should not be stopped because "it looks like rain."

(In the experiments reported) the number of applications ranged from three to ten, and these were made with apparatus varying in power and efficiency all the way from a five-gallon compressed-air sprayer carried by the operator to a power sprayer treating six rows at a time and covering fifteen acres in a day. There was no fixed relation between make or type of sprayer and efficiency of protection. Some home-made outfits gave excellent results. The essential feature is a good pump or other source of power, so that a fine spray can be secured; all other factors are incidental. * * *

If only three applications are to be made during the season, delay the first until it is necessary to treat the potatoes for the potato-beetle "slugs" or shortly before the middle of July in central and western New York. Then use the Bordeaux and arsenicals and spray thoroughly. The second and third applications should also be thoroughly made and at such times as will keep the vines as well coated as possible with the Bordeaux. * * * It is not safe to depend on resistant varieties and neglect spraying. There is no good commercial variety, so far known, that is "blight proof," and claims to that effect may be discounted at once. Some varieties are more resistant than others, and these should be selected, other things being equal, but even these should be sprayed.

In order to secure general spraying at the most economical rates, the station suggests that growers arrange for a "public sprayer." That is, let some one man in the neighborhood make a business of spraying and secure enough fields to keep him busy throughout the season. This plan combines several advantages: The farmer need not learn how to spray; one outfit will do for a considerable area; the materials can be bought in large quantities and therefore more economically; the professional sprayer will become expert and do the work better and faster than the grower himself; and the farmer will be relieved of all extra work connected with spraying. In short, the public sprayer could spray potatoes cheaper and easier than the farmer can do it himself and make good wages at the same time.

TREATMENT OF WINTER-INJURED FRUIT TREES.

From U. S. Department of Agriculture, Farmers' Bulletin No. 251.

Recently attention was called to some of the causes of winter injuries to fruit trees. A number of means of preventing winter injury, either wholly or in part, were there suggested as the result of observations at the different experiment stations.

When, however, the injury has been done, the next step is to find out how such winter-injured trees should be treated. H. J. Eustace, of the New York State Experiment Station, has recently reported the results of experiments along this line. The winter of 1903-4 was unusually cold and long in New York, and resulted in great injury to all kinds of orchard fruits throughout the state. Fruit growers in the different sections were anxious to know how to distinguish between trees that were fatally injured by cold and those that might be expected to recover. It was supposed by some at first that the amount of discoloration of the wood of the tree would indicate the extent of the winter injury, but this was found not to hold true, as was pointed out by M. B. Waite in Bureau of Plant Industry Bulletin 51, part 3. In one instance, peach trees which were located in a low hollow or "pocket" were examined in March. Below the snow line the wood was sound and of normal color, but above this line the bark, though tight on all portions of the tree, was very dark brown all through and the trunk wood was black. On the limbs the bark and wood were discolored as high up as a man could reach. These trees completely recovered and made a good growth of new wood during the season, though none of the trees bore fruit. The next season every tree was in good condition and bore a good crop of fruit.

In another orchard many pear trees two to five years old were examined. The wood and bark of these trees were badly discolored, and the common opinion was that the trees in which the bark was badly discolored were practically ruined, and that the best way would be to cut them off below the snow line and let them send up sprouts from the stumps. These young trees, however, with but few exceptions, made good healthy foliage and a good wood growth during the season, and by the next season had made a very good recovery.

In another orchard of old peach trees the bark on the trunk of many trees could be easily peeled from the wood and these trees were thought to be dead beyond any question by all who examined them. or the most part, however, they produced a good crop of healthy, large-sized, well-colored foliage and made a very fair recovery.

In another instance a Keiffer pear orchard was found in which the bark and heartwood were discolored black all through and the trees were thought to be certainly dead; yet they produced a fair crop of fruit the same season, though somewhat undersized, and by the next June were all in splendid condition, the foliage being of good size and color. A good new growth had been made and a large amount of fruit set.

Similar observations were made in a Bartlett pear orchard in which the trees were about fifteen years old. A number of sweet cherry trees, which, when examined, showed various degrees of discoloration in the bark and wood, recovered from the injury. Japanese plum trees, which, when examined in March, were thought to be dead, ripened a fair crop of fruit during the season and when examined in September had made a thick layer of new wood and bark.

All these observations indicate that it is extremely difficult to tell by any ordinary observation the real condition of trees at the end of the winter season and their ability to overcome the winter injury.

A number of experiments were made to determine what effects different methods of pruning might have on the recovery of the trees. In some instances the young trees were cut off below the snow line and the old trees were cut back to the large limbs or "dehorned." Other trees were given a moderate pruning, and some were not pruned at all.

When peach or pear trees seven to eight years old or over were cut back to where the limbs were about an inch and a half to two inches in diameter or "dehorned," they failed to recover and by the following September all were dead. On the other hand, young peach trees two to five years old thus treated made a splendid recovery, and trees thus pruned back in January made a better growth than when the cutting back was deferred until March. Young trees in the same orchard not pruned at all either died outright or the new growth was mostly in the top, making an undesirable tree. One of the objections to pruning young peach trees back so severely is that it induces a too great growth of new wood which forms a bushy top and necessitates a good deal of additional pruning. The results of these experiments "indicate that the winter-injured trees of over seven or eight years are killed by 'dehorning,' while younger trees may be treated in that way and expected to make a good recovery."

In orchards of both old and young peach trees a moderate amount of pruning back was compared with no pruning and with "dehorning." The trees moderately pruned made in every instance a much better growth than those not pruned at all. Old trees which died when "dehorned" recovered when only moderately pruned.

Much the larger number of the injured trees were not pruned at all, and while many of these made a recovery which was satisfactory to the grower, it was evident that the average condition of these trees was not nearly as good as when they were given a moderate pruning. The unpruned trees contained a much larger amount of dead wood, and the new growth was more generally at the extreme ends of the branches, which made the top of the tree too spreading.

In experiments in pruning frost-injured peach trees at the South Haven sub-station, S. H. Fulton states that much risk is incurred in cutting the main branches of the tree back to stubs and that a moderately severe pruning or cutting back of branches one-half to three-fourths inch in diameter grew vigorously, developing clean, new, thrifty tops, and for the most part were loaded with attractive fruit of fine quality.

On the other hand, trees which were pruned lightly after the usual plan of heading in and thinning out part of the new growth have grown more slowly, were marked by smaller, less thrifty foliage, bore fruit of smaller size and poorer quality, and this fall contain much more dead wood. But it must be admitted that no manner of pruning will entirely renovate a badly frozen tree. There is hardly a tree above four years old on the station grounds that is not rotten in trunk and main branches and held together only by the new growth which has been made since the freeze. This being the case, the trees broke down badly in winds and under their weight of fruit this season. But trees well cut back, having made a greater development of new wood, were better able to resist influences which tended to break them down, and doubtless their lives will be considerably prolonged.

Relative to the cultivation of winter-injured fruit trees, M. B. Waite, of this department, states that "the aim should be, with good cultivation and fertilization, to grow the tree out of the injury. Stable manure will probably answer the requirement in some cases. Nitrate of soda at the rate of 200 pounds per acre may be preferable in other cases. The choice of the writer would be a complete fertilizer, consisting of nitrate of soda, acid phosphate or bone meal, and muriate of potash. Such a fertilizer applied just at the time growth is starting would result in the best possible benefit from the nitrate."

Mr. Eustace further reports the results of observations of eight-year-old peach trees which had been sprayed in the fall with different kinds of sulphur washes. These sprays killed all the fruit buds but the trees made a vigorous growth during the season. On the other hand, unsprayed trees which blossomed dropped all their fruit and deteriorated rapidly, many of the trees dying during the season, and it is believed that many thousand bearing peach trees in western New York orchards which died during the summer might have been saved had the crop of fruit, or part of it, been removed early in the season.

F. A. Waugh, of the Massachusetts station, also reports the results of experiments in pruning back peach trees injured by cold during the winter of 1903-4. Some trees were left unpruned; some were headed back near to the trunks leaving only two-thirds to three-fourths of the previous season's growth was pruned back. These moderately pruned trees made the best growth during the following season. Ninety-nine per cent of the trees thus treated lived, while only 93 per cent of the unpruned trees lived, 81 per cent of those severely cut back, and 52 per cent of those dehorned.

J. C. Whitten, of the Missouri Station, also reports the results of extensive experiments in pruning back frozen peach trees in 1902. As the result of his investigations he found that one-year-old trees cut back nearly to the original bud, while the best growth of two-year-old trees was obtained when they were cut so as to leave the trunk and spurs of the main branches. Young bearing trees cut back to two-year-old wood and to three or four-year-old wood in older trees, leaving stubs of limbs three to four feet long, gave the best results. Judgment is required not to leave too much wood, which gives a weak growth and high heads, and not to cut back so far into the dormant wood that buds will fail to start.

The results of all these observations indicate that it is exceedingly difficult to tell in the early spring the exact condition of fruit trees as regards the extent of the winter injury, and that it is the part of wisdom to moderately prune the orchard and give it an opportunity to grow at least one season before the trees are finally removed. The trees are aided in their recovery by thorough cultivation and an application of some good fertilizer.

ALFALFA IN SCOTT COUNTY.

Chas. H. Lau, Mount Joy, Iowa, Before Scott County Farmers' Institute.

In the face of high priced land and a possible return of crop failures for low prices for farm produce or both at the same time it behooves the farmer in order to make his income tally with his investment and guard himself against emergencies, to be constantly on the alert for such farm improvements and the introduction of such new plants and grains and live stock as commend themselves to a careful and conservative judgment. No one thing today is engrossing the attention of the farmers of the humid states more than the introduction and culture of alfalfa, and its discussion was never more appropriate and timely than it is now at the farmers' institutes. Realizing full well, we farmers east of the Missouri river, that alfalfa has proven a veritable godsend to that large tract of arid lands comprising the extreme western states, some marked in our old geographies as the "great American Desert," yet the mistaken idea, that, though the higher and drier altitudes were its natural home, its introduction into the more eastern states would of necessity prove useless, has discouraged individual effort and for many years retarded its adoption in the humid states. But so marvelous were the tales of this magic plant as a fertilizer and a feed producer and so well authenticated were the reports that individual effort again became stimulated, and experiment stations all over the country were actuated to determine the causes of its failure in the humid states and point out the road to success. As a result much light has been shed on this all-absorbing subject. Luxuriant, heavy alfalfa fields have become an established fact in all the middle and eastern states, Illinois reporting alfalfa from every county except two and an aggregate of 10,000 acres, of course more or less imperfect, due to causes with which present knowledge might have been overcome by artificial means. Although we may not be able to achieve those marvelous results secured in its natural home with comparatively little attention, or on irrigated lands, yet to see Scott county in the dry falls when everything is seared and parched by a brassy sun, studded with spots of luxuriant green like oases in a desert seems to all indications a near probability, and even to a limited extent, to the use only of a hog pasture it would prove an acquisition so valuable to the farmer as to rank in importance to the introduction of the barbwire or cream separator on the farm.

WHAT IS ALFALFA?

What is there about alfalfa that should make it so desirable for introduction? Its value lies in the fact that it is a legume, a clover, yielding a ton and upward per acre at each cutting, which is done three to five times a year, of hay equal in nitrogen pound for pound to the best old-fashioned bran. It is greatly relished by all live stock and its high per cent of protein makes it particularly valuable for young growing stock, imparting health and vigor in a remarkable degree. As it is a perennial clover it is unexcelled for the purpose of a hog pasture. Fifty dollars an acre gain in pork has been reported in favor of alfalfa alone. As a forage plant it promises to save our hogs from utter deterioration, a deterioration that is becoming more and more apparent as the years roll on, and is one of the serious consequences of excessive corn feeding. It is here where alfalfa comes in as a valuable counteractant and where it will prove to be of particular interest to the Scott county hog raiser. What may be said in favor of clover as a hog pasture may be four-fold said of alfalfa. The feeders have realized and many experiment stations bear them out with figures that don't lie that alfalfa with corn forms a perfectly balanced ration for finishing live stock; is a palatable, nutritious and wholesome, as well as the most economical feed for fattening cattle. If alfalfa can be made an adjunct to the corn in the great corn belt region it will not only add a fresh impulse to the live stock interest here as it has already done in the west, but it means a vast deal for agriculture in general—direct fertility to the soil where it grows and indirect fertility through the agency of cattle fed upon it. It means a promising record to the farming interest of the United States. As a fertilizer it has no equal and is invariably followed by vast crops when broken up. Reliable cases are on record where after fourteen years of such ploughing up the wheat still showed a greater height of straw on the old alfalfa line. Incredible as appear the glowing accounts of alfalfa and its virtues we never meet with any attempts to dispute or question the same, but annually meet with recurring endorsements. If half of what has been written or said about alfalfa were even true then an alfalfa patch on a farm would be nothing short of a bonanza.

MY OWN EXPERIENCE.

I have long entertained this notion, but as yet fail to see the bonanza. To those who know me as an alfalfa crank, as well as to those who desire to be some one day, it may be of interest to briefly summarize my experience and explain why my ideas failed to materialize into a fine alfalfa field.

The seed, imported from Turkestan, seeded in the spring of 1902, produced a very good stand, but a very cold and wet summer, followed by two more similar summers, never allowed my alfalfa to get its feet dry. This was a violent and abrupt climatic change from the dry steppes of

Asia, and resulted in the depletion of one-third of the original stand, for which I could not well be held responsible. My next mistake was to seed it in spring, in freshly, raw-ploughed soil with a nurse-crop, on land not sufficiently rich. It ought to have been sown on a carefully prepared seed-bed following barley-stubble, in the latter part of August on land sufficiently rich to produce 80 bushels of corn. In short, without knowledge or experience at that time I tried to raise alfalfa as we raised clover, which resulted in a partial failure yielding a crop only from three to seven loads of alfalfa hay annually as a hog pasture. In the absence of a thorough understanding of the nature and requirements of this plant, other blunders were committed, hence the partial failure of my alfalfa venture as well as those of others similarly situated. But the undertaking will not rest here. It will be carried to the bitter end, for we are told on the very best authority that land worth $100 per acre before will be worth $200 after alfalfa has proved a success on it. It has greatly raised the price of farm lands in the extreme west, where it was the most worthless, and it must of necessity have a similar effect here after alfalfa culture is a demonstrated success. After all, individual effort must determine in each case whether or not this wonderful plant can or can not be raised on every farm, and the young farmer who starts out today on the alfalfa venture will have decided advantages in his favor for he can profit by our failures, and gain by the valuable information extended by many experiment stations, and last but not least, considering the great gain that its success assures, he can afford to make great sacrifices. However, I would warn the beginner against becoming a plunger in this, as yet a questionable venture, but rather concentrate his effort on a three to five-acre piece to be used as a hog pasture, attachment or extension. This small patch will soon teach him the difference and drawbacks of caring for a larger field. There is a heavy crop to cut and cure the second week in June, when the weather is unsettled, there is three times cutting and hay making (hog pasture or no hog pasture) just when the plant calls for it and when other farm operations may be pressing. There is bloating of cattle and sheep allowed to browse upon it. There is the possibility of spontaneous combustion if improperly cured, and many other difficulties. It is always better not to overreach one's self, but rather get accustomed to the obstacles by degrees and get experience on a limited scale.

ALFALFA AS A COMMERCIAL FEED.

Kansas today reports an alfalfa crop of 640,000 tons of hay. Prof. Hansen has scoured northern Siberia and has brought home with him from the 63rd latitude clovers and alfalfa varieties to be used for rotation with macaroni wheat to save the wheat soil from exhaustion in the high, dry and cheerless regions of the western Dakotas, an attempt which already promises success.

If in addition to these natural alfalfa regions the middle west and eastern states will raise alfalfa to their limit, as they are attempting to do; if, furthermore, the manufacturers are starting up simultaneously to convert these vast crops of alfalfa into nutritive value equal to the best of wheat-bran, into suitable form for use in and shipment to eastern markets, its vast significance upon the feed problems, dairy interests and cattle-feeding interests can hardly at this early day be approximately calculated. Its general introduction as a forage plant and as hay is likely to revolutionize things. Already it is finding its way into the great eastern markets, baled as hay, ground as meal in sacks or pressed in cakes with cheap molasses. Unlike clover alfalfa hay produces no dust and as a feed alone good alfalfa hay can not be excelled by any other combination of feeds as far as wholesomeness and nutrition are concerned. Its ultimate cheapness will eventually drive all spurious stock foods and adulterated mill-feeds, with which farmers and dairymen have been bamboozled, lo! these many years, out of the market. Stock food concoctions composed of pulverized corncobs, buckwheat hulls, salt, charcoal and mill-sweepings with a little fenugreek and tumeric to give it a medicinal odor have lured from the unsuspecting farmers thousands of dollars. These combinations, always high in price and generally worthless, were difficult for him to see through, but a powerful combination is rising today which will be the stockfood's death-knell and relegated to a timely grave. It is called pure food law and alfalfa feed.

SOILS FOR ALFALFA.

It was long supposed that the natural region of alfalfa was confined to climatic belts. But it has since developed that it is more a question of soil than of climate, and fortunately for the eastern farmer it has been ascertained how to doctor up a soil if it proves deficient in certain elements. In the alkaline porous soils of the west, that abound in the mineral elements, that have under the dry climate not been bleached out as they have here, and that are pervious to water and air alike, there alfalfa thrives luxuriantly with very little attention.

But on the black and clay soils of the more eastern states it is only in favored localities where it will thrive without artificial aid. Joseph Wing, a recognized authority on raising alfalfa under similar conditions as ours, and who after many unsuccessful attempts on his farm near Mechanicsburg, Ohio, has solved the problem and now annually raises 350 tons of alfalfa hay, attributed the failure of alfalfa in most cases to a lack of time for neutralizing the acidity common to many of our soils. It is this acidity that interferes with the growth of alfalfa and the fact that our soils are underlaid more or less deep with a strata of limestone does not necessarily prove that it is sufficiently present on the surface to counteract this acidity. Wherever limestone is found on the surface and the land is sufficiently rich alfalfa culture is a success. The beginner should make sure of this part of the subject and apply unburned limestone dust to a part of his field at the rate of 3,000 pounds per acre and note the difference.

INOCULATION.

Another process that may be necessary to establish a field of alfalfa is to inoculate the soil with the nitrifying germ, a bacteria at the root of the plant which absorbs the nitrogen from the air, making it available for plant-food. For the same reason that we add buttermilk from the last churning as a starter to the cream to facilitate its ripening. The germs will eventually get to the alfalfa, but if they are put there with the seed they will be ready for business at once and there will be one excuse less for not succeeding with alfalfa. I have several barrels of surface scrapings from the old alfalfa patch to be applied on the new seedings next August.

For lack of space and time I have carefully avoided figures and data on this subject, but gave you the consensus of opinion of leading and successful alfalfa growers of the humid states and the instructions from the experiment stations plus my own experience—hoping that it may lead to the fulfillment of that much desired end: An Alfalfa Field on Every Farm!

THE SILO.

Wallace's Farmer.

Dairying is one of the most profitable lines of business that can be undertaken on the western farm. Dairy communities are always well-to-do. Their soil is more fertile; their farms better improved. Everything is more home-like and there is usually better society in a dairy section than in any other.

There is but litle probability of the supply of butter and cheese ever being greatly in excess of home demands. If our readers will examine the reports of the department of agriculture for the last twenty years they will find very little variation in the number of cows required per one thousand of population in the United States. The number of cattle, hogs and sheep vary greatly; but the percentage of cows is confined within very narrow limits.

Dairying is not nearly as profitable as it might be, however, for reasons that we have frequently pointed out. Perhaps one-third of the cows of the United States today are kept at a loss. Another one-third about pay expenses; that is, pay for the grain and forage and labor. The remaining one-third pay a very handsome profit.

The loss in keeping these cows is due to two causes. One is that they are not dairy cows to begin with; do not have a capacity of milk production that will justify their keep; and this can not be changed. If farmers knew how many poor cows they had, which they can easily find out by the use of the scales and the Babcock test, they would send these to the shambles or sell them to the steer raiser.

Another reason is that they are not properly fed. They are not given a balanced ration. There are thousands of cows in the corn states that have paid poorly this year because they have been fed on corn and timothy or corn and corn fodder alone, or corn and straws of various kinds, or inferior clover hay.

The experience of the last thirty years has shown that a balanced ration can be grown on the farm without the purchase of any feeds containing protein, as, for example, bran, oil meal, or cotton seed meal. It has shown that forty pounds of silage and eighteen pounds of good clover hay will make a fairly well balanced ration for an ordinary cow; in other words, that a ton of silage will furnish half the ration of an average cow for fifty days; and that an acre of good corn that will yield fifty bushels to the acre will furnish from eight to twelve tons of silage.

The farmer who has corn of this character and clover, or clover and timothy, or alfalfa meadow that will yield from two to three tons of hay per annum can easily figure on the number of cows he can keep on a definite number of acres during the winter season. The number of acres of pasture that will be required will depend upon the character of the pasture and the season; but usually on the care he takes of his pasture.

Every dairyman who is keeping from ten to twenty cows should, therefore, begin to study the silo question very thoroughly. This is one of the topics that should be discussed not merely at institutes, but at the firesides in every dairying community.

The great obstacle in the way of the individual farmer using the silo is not the cost of building it, which, considering its capacity, is not as great as the cost of a barn would be. It is rather in the cost of the machinery necessary to convert the corn into silage and of the help needed at that particular time. Here is where co-operation comes in.

Two farmers, or at the most three, can very well co-operate in the purchase of power and silage cutters, and by co-operating can put say ten acres of corn from each farm into the silo quite as cheaply as they can harvest and shred it, or husk it in the usual way. To begin with, in case corn is put in the shock, it should be cut with the harvester and bound. The cost of the cutting is the same in either case. It is no more trouble to put it on the wagon than to put it in the shock, nor indeed as much. It is no more trouble to put it in the silo than to shred it. The cost of the machinery does not differ much in either case.

The advantage is that when corn is once in the silo it furnishes a nutritious, succulent ration through the whole winter; and if any is left over it pieces out short pasture in the summer season. If a man has from ten to twenty cows he cannot afford to be without a silo. If he will co-operate with his neighbors he can secure his own silage at the minimum of expense.

Bear in mind that silage is not a balanced ration. It is half of a balanced ration. The other half, as above stated, must be clover or alfalfa hay. Cows that are fed silage must be well sheltered; for if you feed a succulent or summer ration, you must give approximately summer temperature. Hence it is not the thing for the farmer who allows his cows the shelter of the south side of a barber wire fence when the thermometer is down around zero.

The farmer can well afford to put up more silage than his cows require. He can feed it to good advantage to his young stock; to his sheep; to some extent to his hogs. If he is careful his horses will be better for a small amount of it.

We hope our readers who are engaged in dairying and keep over ten cows will take up this silage question in earnest. It will be money in their pockets. We do not advise it for farmers who have less than ten cows; for the reason that a small silo can not be built nearly as economically as a large one. There is more friction, more exposure on the sides and it does not have sufficient depth to give the weight necessary to so thoroughly compact the silage as to exclude the air.

Some of our new subscribers may ask: What is silage, anyhow? It is simply canned corn fodder, corn and all. If this does not quite convey the idea we will say: It is simply cattle "kraut" made of corn. It is made by running the corn plant when at its best or about the time you would cut it up for shredding, through a cutting machine, cutting it in small pieces, ears and all, and then putting it in a tub with neither top nor bottom, but resting on a cement foundation. The weight of the silage excludes the air, and the heat developed kills every form of microbic life. Hence it keeps just as canned corn or any other green stuff. The great heat and moisture penetrates every particle of it and there is very little waste.

Silage for dairy cows has long passed the experimental stage. There is no more risk in putting up a silo properly, and filling it with corn, than there is in buying one of the best up-to-date plows, mowers or reapers.

IS FARM LAND IN IOWA AT PRESENT PRICES A GOOD INVESTMENT.

E. G. Preston, Battle Creek, Iowa, Before Ida County Farmers' Institute.

To answer this question would require a great deal of business foresight and keen judgment. Upon inquiry we will receive from men who have money to invest various answers, these answers depending upon the point of view of the investor.

In the first place we will all agree that a good investment must be a safe one, must return a good rate of interest or income and, further, one that consists of salable property, that which can be sold at any time and realize a cash value therefor. Now land in our county is regarded by nearly all as a safe investment and under present conditions land in Ida county is very salable property, so the question will therefore depend upon the rate of interest or income to be derived from an investment in farm land.

First let us look at it from the standpoint of the land speculator. As he looks over our lands he finds values placed from $90 to $100 per acre for most of the good farms and he is told these farms will rent for from $3 to $4 per acre. He also investigates as to the possibility of our land increasing in value. In answer to this our best informed men believe Ida county lands will advance in value and that the $100 mark is not the limit, but they are conservative as to what the advance will be, believing it will depend on the crop conditions in the future and trend of the times. Now it does not take our speculator friend long to figure $100 land renting for $3.50 with taxes 50 cents and keeping up of improvements at from 20 to 25 cents per acre, will return an income of three or less than three per cent per year. He decides it is too low and usually goes out to our newer lands where there is a greater chance of land appreciating in value.

Again from the standpoint of the average renter who has not sufficient capital to own a farm of our high priced land, he answers it is cheaper to rent at $3 or $4 per acre than to own and pay at the rate of

5 to 6 per cent interest on a large loan to cover his investment and for the same reason as the speculator decides not to buy here.

But let us consider the land owner himself. We have in mind a good quarter section of Ida county land owned by a capable farmer who makes the farm his home and seeks to make the farm produce as large a yield as possible. We ask, does it pay him to own that farm? Or would it not be better for him to sell and buy newer, cheaper land where chance of appreciation is greater?

Let us see. Under a good system of crop rotation and proper management our farmer raises 60 bushels of corn per acre. This crop is worth on his farm 30 to 35 cents per bushel making a gross return of $18 to $20 per acre. Now if it costs him $6 or $7 per acre to raise the corn he still has a net return of $10 to $12 per acre; certainly a good return on the money invested. True his corn crop does not cover the entire farm, for his oats, barley or the hay crop will, under present market conditions, yield him a return of from $5 to $10 per acre, and our farmer still has the opportunity to feed out this crop to the hogs, cattle or sheep that will in return increase the net profits per acre of his lands. Under present conditions of markets and good crops our farmers who own and manage their farms can make a good rate of interest on their investment. But in this connection we believe there are a good many farms in our country either through poor management or inability to produce good crops, are not paying a fair rate of interest on the investment.

We still have another class to consider. He is called the "lonesome farmer." He has moved to town to have closer neighbors and city advantages. Now if he owns a $100 an acre farm and rents for cash at $3 to $4 per acre, we can not see that he owns a good paying investment unless we consider the probable increase in value of the land in his locality. Under the present system of cash rent we do not believe he has a good income after deducting the amount necessary for improvements. But if he could find the right man who would rent for shares and properly manage the farm he will under present conditions get a fair rate of income. But like the majority, he rents for cash and knows he has a safe investment. He refuses to sell the old place where he has farmed so long. He says keep hold of Ida county land, and this advice is no doubt very good.

But the experience and advice of the retired farmer does not answer our question, and it is a question we can not answer for the public but must leave it for each individual investor. We have heard it predicted by men of good judgment that Ida county farms will in the future sell for $200 per acre, and if this should ever come true an investment in our land at present prices, even with a low rate of income, would certainly be a good investment. But what we have observed, we believe the newer lands to the west of us are at the present time increasing rapidly in value and under present conditions offer good investments for the purchaser.

What we need today is better farming, better system of rotations and more of the land in grass. Under such management, our farms can be made to produce better crops, and as a result rents will be higher, thus affording greater income on the investment. The trouble today is more in the management than with the land itself, and our answer therefore will depend much upon the farmer himself.

SANITATION ON THE FARM.

George Scott, V. S., Waterloo, Iowa, Before Black Hawk County Farmers' Institute.

As one generation passes away and another takes its place, the influence exerted by the adoption of sanitary measures on the health of the human race is ever gaining a broader recognition, and these days of the twentieth century, there are few homes being erected without careful calculations being made regarding the facilities with which drainage of the building site can be accomplished, and good ventilation from cellar to garret, with the admission of all sunshine possible, is being more and more demanded in the construction of the modern home. A brief review of the past and present health conditions of many of our eastern states, including Ohio, Indiana and Michigan, furnishes a chapter of positive evidence in defense of the assertion that sanitary science properly applied has power beyond any other agent at man's disposal in promoting the public health.

Only a few decades ago these portions of the country were unhealthy places of residence for man. At that time the land was still covered to a large extent with the primitive forest; the swamps and marshes were filled with water, decaying vegetation and ooze the year round; the mosquitoes were as the sands of the seashore, and ague, malaria and kindred ailments were epidemic among the people year after year. Today, in the same states, the forests having been cleared away, the surface of the land exposed to the invigoration influence of the sun's rays, the swamps drained, the land cultivated, the mosquitoes almost exterminated, owing to conditions being made unfavorable to their existence, the air purified of the pestilent exhaltations of swamps and swale, we find that ague, malaria and other diseases of the early days have become as rare as on the beautiful rolling prairies of our own state, and these lands, once the breeding places of diseases, have been transformed into veritable health resorts. That the improved sanitary conditions to which these states have been subjected are the chief factors in the promotion and maintenance of this glorious conversion, I believe no sane person will for a minute dispute. Similar results from similar courses are being noticed in many of our southern states, and on the Island of Cuba, and I believe the day is not far off when the health officers can truthfully proclaim the absolute eradication from the south of the dreaded yellow fever, a victory which can be achieved in no other way than by the application of such thorough sanitary measures, that life will become a burden to the mosquito, that carries the causative germ and by its bite inoculates it into the people. Health statistics show and observation verifies the accuracy of the report, that the practice of sanitation in our great cities has been as prolific of results, as it has been in the country.

We find the crowded, poorly ventilated and dimly lighted rooms of the tenement buildings are hot-beds of sickness, while other buildings in the same localities into which the sunlight and fresh air had free access, are peopled with robust men, women and children. If this imperfect picture of the benefits of applied sanitation concerning the health of the human race is a true history, even though no other evidence could be produced, I believe I would be justified in declaring to you today that these same principles applied on your own farms and inside and all around your stables and pens, would bring about a ruggedness of constitution in all your domesticated animals that would greatly lessen their susceptibility to infection and disease.

The three great natural agents of sanitation are: pure air, sunlight, and drainage. Many pathologic germs can not live if exposed to the influence of the sun's rays, and all are deprived of the power of multiplication. Moreover, light imparts increased vitality to both animal life and the higher forms of vegetation, so that a double benefit is the reward of a close friendship with the sunlight. First, the vitality of the germ life is *diminished*, rendering unavoidable association with them less dangerous to the animal. Second, the vitality of the animal life is *increased*, and a consequent decreased vulner ability to contagion ensues. In other words, our common enemy, the microbe, becomes weakened and less powerful in its assault, while our fortifications are strengthened and better able to resist their attacks. In the vegetable world a good lesson can be learned of the benefits derived from air and sunshine, by comparing the apple grown on the tree that has been intelligently pruned, with the unpruned tree. On the *former* the fruit is large and a good color, texture and flavor, and has good keeping qualities. The *latter*, being shadowed and deprived of air to a certain extent by the dense foliage, is dwarfed and sallow, watery in composition and an early rotter. I do not mean to assume that there are no other advantages than additional air and sunshine to be gained by pruning, but I do claim that these are of great importance. Turn a trough upside down on the meadow and bore a number of holes through it so that some air and just a little light is admitted, and you will find that the grass thus imprisoned will still grow, but note its character. In a few days it becomes pale, soft and emaciated and as it grows longer, it is noticed that every blade is attracted toward the outside holes, which soon become filled, and as the free ends protrude from the openings they at once begin to take on more of the green, healthy appearance of the surrounding grass. The principal cause which contributes to this phenomenon is that darkness hinders the development of the organic coloring matter or chlorophyll, which has the function of conveying oxygen to the plant tissues, and through the lack of this important element, the vitality of the plant is weakened, and if these conditions are continued long enough, its life is completely destroyed. The organic coloring matter in the blood of man and of the lower animals is called haemoglobin, and its duty like that of the chlorophyll of plants, is to carry oxygen to the tissues of the body. Its development is also arrested by darkness and in case of its deficiency, the body tissues are not properly aerated and a consequent weakening of the animal constitution is the result. Darkness and imperfect ventilation are conditions that are usually closely associated, and where both are imposed on inmates of a well filled stable the inevitable outcome is that this oxygen carrier, the haemaglobin, becomes subnormal in quantity, while the air in the building becomes deoxygenized and laden with poison gases, from being breathed and rebreathed by the animals, thus robbing the tissues to a still greater degree of that essential property, which lends strength and vigor to the animal system. Many examples of the injurious influence exercised by such conditions as those described, have fallen under my personal observation, but time will not permit me to call attention at this time to more than one, and that as briefly as possible.

A few years ago, in Buchanan county, I had occasion to test a herd of fifty cows with tuberculin, to determine if any were afflicted with tuberculosis. During the winter prior to the time of testing, and in the mornings and evenings of the summer months, while milking was in progress, these cows were stabled in the basement of a large barn. On the west side and part of the north end of this basement, the walls were built into an excavation in a hillside, the surface of the ground being about on a level with the ceiling of the cow stable, which was undoubtedly considered a great benefit, affording as it did, ample protection against the cold winter, as well as the summer's heat. The ceiling was low and liberally supplied with cobwebs and dirt, an ideal habitation for disease-producing germs. On the east side were the doors, and a number of small windows, the latter being rendered opaque by the accumulated dust of years. The whole interior was so gloomy that it would require a keen eye to read from the printed pages of an ordinary newspaper, if standing any distance from the open door. Although warmly housed and well fed, these cows were in a very unsatisfactory physical condition in the spring, and their milk tests at the creamery were equally unsatisfactory. The tuberculin test showed thirty-two of them were tuberculous. This is a fair example of the results of sanitary negligence. Compare this with the Texas cattle, which roam at freedom over the plains. * * * In Iowa and other northern states, an outdoor life for cattle the whole year round is out of the question, owing to the severity of the winters. About five months of every year, shelter from the wind, the snow and frost must be provided to prevent suffering, with consequent loss of flesh and milk in the adult, and very often life itself in the young and weak. This being the case it becomes necessary to exercise your faculties of reason and inquire what conditions aside from freedom exists in the open air that are not found in the stable. The two words in the question, open air, suggest the answer, which is no other than pure air and sunlight. But this does not complete the solution of the problem. In what way can stabled cattle be accommodated in this particular, equally with those on the range? I will admit that the answer is easier than the achievement, and is simply this: If you can not have your cattle outside, bring the outside inside to your cattle. To be more definite, I will say that if life in the open air and sunlight contributed to health, where severity of climate makes shelter unavoidable, it should be provided with such thorough ventilation that the air on the inside as it becomes impregnated with carbondioxide from the breath of the animals is constantly finding its way out, while the fresh oxygen-laden air from the outside is as constantly being supplied to take its place, sunlight being at the same time admitted through a sufficient number of windows. This constant interchanging of air can only be affected by large ventilators being built opening into the stable through the ceiling and extending upward through the roof by means of tubes, or shafts, which serve as a passage for the impure air and assure its exit from the building. These shafts may be so constructed as to be used for hay and grain shutes at feeding time. Fresh air can be admitted through slatted windows opening through the outside walls. These should be placed on all sides of the building, each being made so it may be opened and closed, thus making it easy to prevent injurious drafts from reaching the animals. In mild weather, and when the direction of the wind will permit, more of the windows may be opened, thus increasing the supply of air, which, if admitted free from drafts, can never exceed the demand. This, with thorough drainage of the surroundings, a clean interior, good beds, and the frequent removal of all manure and soiled litter from the vicinity of the building, will constitute a shelter which so closely resembles the outdoor life, in all, but freedom, that together with proper food and pure water an added revenue from your farm animals is insured, that will amply compensate for the trouble and expense incurred in its construction.

I have omitted all mention of medicinal sanitary agents, such as the different coal tar preparations, carbolic acid, the sulphates of iron and copper, chloride of lime, corrosive sublimate and other antiseptics, deodorizers and disinfectants, for the reason that these, without proper ventilation, light and drainage, while of some value, are inadequate to perform any lasting service, and are totally unable for a moment, to impart any of the benefits which constantly attend those three indispensable agents of science.

POULTRY RAISING.

August Hoch, Before Buena Vista County Farmers' Institute.

De we realize what the American hen really is? From a profitable point of view, nothing on our farms today will yield as good returns proportionally on labor and capital invested. Today Iowa leads the whole United States in its poultry and egg supplies. Thousands have engaged in poultry culture. As many have failed. The last census states that the average farmer received but seventy-five eggs per hen yearly. The poultry and egg value for Iowa is over twenty million dollars. Aside from its importance as an egg producer the hen finds all the waste grain scattered about, which would otherwise be lost. She searches the orchard for insects and bugs injurious to the fruit trees, thus keeping the fruit trees free from these pests at a time when the farmer is least able to give this matter proper attention.

But what is the average farmer's hen. A hen of no particular breed, almost every size, age, shape, and color, layers and drones all mixed together, with no particular care, other than the housewife is able to give from her household duties. The care generally consists in setting a few brooding hens and caring for them and the chicks for a week, or possibly two, and then biddy is turned loose with her flock to shift for herself.

The housewife also gathers what eggs there might be from an indefinite number of hens and if she but have a goodly number of eggs for the weekly marketing, she is content. Content with a seventy-five-egg hen when she might have one hundred and fifty to two hundred eggs per hen, with no more feed or cost for production.

Weed out the old hens. Early hatched pullets are the ones that fill the egg basket when winter prices are high. That is the hen to keep. One year old hens lay better eggs for hatching, but not so many as pullets. After that age most hens do not pay as layers and should be marketed. Then what does the farmer get? With hens of every size and color, can he expect to receive as much per pound as the man with birds of fair weight? Choose for the farm a bird that lays and a bird that weighs.

Keep only the best layers in your flock. There is as much difference in hens as in cows. Select your best to breed from, and keep no others. Some people think a hen is a hen, and as long as she is not a dead hen she will produce eggs profitably. Not so. Hens are like humans; some are not worth the food they consume. Weed these out, keep the best layers, and try to improve them, and if you take a genuine interest in them the chances are you will soon be dissatisfied with anything short of the best and you soon become a fancier. Meantime if you have a mixed flock and do not wish to dispose of them at once and start with pure bred poultry, improve the laying qualities of your mixed stock. Get a pure bred cock bird from some fancier who has a good laying strain. Mate him with your mixed birds and the next generation will be better layers. Remember the male bird is half your flock. You can get a pure bred male bird that is not good enough in color perhaps to reproduce his own breed but is in other respects a good bird and just what you need to introduce new blood into your mixed flock.

My plea to you is better poultry and more of it.

Begin with thoroughbred stock. My reason is simply this: The poultry man expects, and gets one hundred and fifty to two hundred eggs per hen yearly as compared with seventy-five eggs laid yearly by the farmers' hens. In July and August when spring chickens are bringing twelve to fifteen cents per pound on the market, the poultry man has a fine lot averaging in weight four to five pounds while the farmer must wait until September or October and receive only six or seven cents per pound. Thoroughbred poultry will always make a good showing for the amount of food consumed while mongrel stock will not.

To start with thoroughbred poultry it is not necessary to invest a small fortune, as many believe. Begin small. Select the breed you are going to raise, and learn all you can about it. The first year get a setting of eggs from some reliable breeder who handles the kind of stock you wish. Or, if you can buy a good hen of him, better still. Take good care of these eggs or pens, whatever it may be, and you will be surprised how soon you will own a very fine flock of thoroughbred chickens. Each year select your best layers which are good in shape, color and size, and breed from these. The advantage gained by using selected layers is that in a few years you can develop two hundred-egg hens.

In selecting your breed it is not so much the breed as the strain. For instance, we find some Plymouth Rocks which have been bred for high egg-productiveness and which will be just as good layers as the little class, such as the Leghorns.

Too often we find pure bred poultry condemned because of the lack of selecting the best layers each year. In selecting stock you choose the best. Why not do so with poultry?

Keep your poultry and poultry houses clean and comfortable. A lousy hen is not a laying hen and insecticides are so cheap one can have clean, sanitary houses at a very small expense. A thorough spraying occasionally will keep the houses clean and do a great deal toward putting your poultry on a profitable basis. In the winter give them plenty of straw and litter to scratch in, plenty of water and feed, and instead of bringing your eggs to town in a peach basket you will come with several egg cases loaded in your wagon.

The past few days have been balmy as spring and the poultry raiser realizes that hatching time is at hand. A few already have broody hens but the broody hen has been supplanted by the incubator. This machine has come to stay and the setting hen may as well abdicate, for the machine is better in every respect than the hen for hatching purposes. Assuming that the farmer has a good reliable incubator (and anything less is too dear at any price) he can hatch more chickens, and stronger and better chickens, with less labor than hens would require. If the incubator is a good one, and the operator is painstaking and careful, the results with good fertile eggs will be all that could be desired.

Directions come with each incubator. Follow them closely and when you once understand the machine, it requires very little care. Ten or twenty minutes once a day is all the time it takes. This time is required to fill and trim the lamp, turn and cool the eggs. There is no danger of hens breaking eggs, having other hens lay in nest, of greedy rats stealing the eggs, no dusting of old chicks with lice powders, no trampling of young chicks by a fussy hen, and last and best, no lice on the young chicks, for every poultryman knows that lice is the cause of most of the loss among young chicks.

Well begun is half done, but finish the other half with good brooding, care, and proper feed and you will be more than satisfied with the results obtained with machine incubation.

We all hope that this institute will give the poultry question the proper position on its program that poultry deserves. That in a few years Buena Vista county will be the banner county for poultry and eggs and that each and every farm will have a fine flock of thoroughbred hens, well housed and cared for and yielding a handsome profit to their owners.

USES AND ABUSES OF PASTURES.

B. F. Seaman, Davenport, Iowa, Before Clinton County Farmers' Institute.

It is with pride that corn fanciers in Iowa point to the many millions of dollars represented in corn during the past year, but even the vast sum so proudly ascribed to this commodity falls short by about four million dollars of the wealth represented by Iowa pasture land. When we think what meager care is given pasture land in comparison to that bestowed upon the corn lands it seems to the sane observer that it is somewhat like "robbing Peter to pay Paul." Would much prefer to speak on the topic, "How to Maintain Pasture," but will proceed to make the most of my subject. The abuses of pasture land is legion, and its uses are universally recognized. We will consider first the proper method of making pastures in this part of Iowa. This subject should be further sub-divided under the heads, "Permanent Pastures" and "Rotary Pastures." It is impossible to farm without a permanent pasture; they are convenient around buildings, and much better to have them there. You do not act wisely when you put your pasture on the poorest spot of land you own on the farm. There are some farmers who begrudge every foot of good land devoted to this purpose, but the fact is that let the land be ever so good it is a paying proposition. Personally, unless one has an abundance of land, it is not wise to make permanent pastures; the best effect will be gathered from rotation. Broken land, sown to clover, timothy and bluegrass, which each supplants in turn, then turn over the soil and change crops provides the good results. Natural, fertile, virgin soil, transformed by man by grass sowing makes the best of pastures.

Little woodlots from which you have used the timber, where a little shade remains, make pastures of an ideal kind. No crops grow so well on them as pasture; cool, and washed, not wet. Such are the pasture lands of Michigan, which are recognized as the very best. On these spots sow a mixture of timothy, red clover, white and alsike clover and orchard grass. There is not enough known of the last named grass, which is worthy of the best and thoughtful attention of farmers and dairymen. This grass is the first to spring in the early season, and is the last to be affected by frost. Much is said of corn breeding; the same thought applies to pasture seeds. Sow different grasses and so extend the usefulness of our pastures one extra month.

When you plan for your pasture, take your good land, not the best always; make it good, stir it up, plow six or eight inches deep and having made a suitable seed bed sow your seed mixture. When a good stand is assured don't make the mistake of being over-conservative or over-radical. Give the grass time to appear and get a good breath; then, when its growth is assured, turn in your stock and make good use of it. Exterminate weeds, especially thistle and sour dock. Make your pastures many and small. Break them up occasionally by broadcast seeder, and don't be afraid of tramping by stock, except as they make regular runs.

METHODS OF COMBATING INJURIOUS INSECTS OF FARM, GARDEN AND ORCHARD.

S. W. Snider, Center Point, Iowa, Before North Linn County Farmers' Institute.

All organic nature is extremely complex. There is a definite relationship between the various species of animals and plants, a relationship as yet too little comprehended by man. In the constant struggle, individuals of one species destroy individuals of another and are in turn destroyed by still others. Nature tries to keep peace by allowing some of all to survive. She is always trying to maintain an equilibrium, and, if undisturbed, succeeds fairly well. But the equilibrium is so delicate that the introduction or destruction of a single species may destroy it. If none of them were destroyed, the progeny of a single female aphid or plant louse, such as is often found upon apple twigs, in a single season would become numerous enough to completely cover a strip two hundred miles long and eleven and one-half feet wide. But as long as an equilibrium is maintained there can be no such rapid increase. A host of natural enemies feed upon the aphids and are instrumental in reducing their numbers. The natural enemies of this insect are largely other insects; these are preyed upon or parasitized by other natural enemies and perhaps they in turn by still others. To a greater or less extent the same is true of most injurious insects. The old dogma, "Big fleas have little fleas upon their backs to bite 'em and little fleas have lesser fleas and so on ad infinitum," becomes applicable to almost any insect. Insects affecting cultivated plants usually have a food supply which is practically unlimited so that their natural enemies are the chief factor in determining their abundance. These natural enemies include a large number of species of parasitic and predaceous insects, fungous diseases, birds and other small animals. Many of these will feed upon but one species of insect, consequently food supply is the chief factor in controlling their abundance. When something happens to reduce its natural enemies, an insect becomes unusually abundant for a time. Then its enemies have an unlimited food supply and increases rapidly, soon becoming so numerous that the host insect disappears suddenly and we wonder what became of them.

The parasites then die for want of food and the host insect again increases. Theoretically, this explains the unusual abundance of certain insects at times and their scarcity at other times; practically other factors may also enter in. There is now less danger than formerly of new injurious insects being imported, because of the greater care taken to prevent it. Many of our insect pests are native of the United States. Some notable exceptions are San Jose scale, the Gypsy moth, codling moth and the Mexican boll weevil. Destructive as these insects have been, they also produced some beneficial results. The San Jose scale has given us state entomologists and much needed crop pest laws; in lead arsenate the Gypsy moth has hastened the perfection of an arsenical spray, harmless to the most sensitive plants; the Mexican cotton boll weevil, even though it caused the loss of $20,000,000 last year, ultimately promises to repay it to the south by awakening the cotton growers to the importance of better general cultural methods—methods now necessary in order to raise cotton at all. Before considering the specific insects which infest various crops here, perhaps the remedies for them should be discussed in a general way. Remedies may be classified into three more or less distinct classes—natural or biological, cultural and direct or artificial. Natural or bioligical remedies are the most important and the most permanent. They seek to restore the equilibrium which has been destroyed. Examples of such remedies are to be found in the various parasitic insects imported to prey upon the San Jose scale, cotton boll weevil, and other imported insects which thrive so well here because of the absence of their natural parasites. Often for some unknown reason these parasites will not thrive under the new conditions, as was the case with the kelep ant from which so much was expected in the south. In time nature herself restores the equilibrium. While the kelep ant has failed to check the cotton boll weevil it is now noticed that some of the native ants are beginning to prey upon it, so that ultimately they may effectually check it. For some insects, birds and fungus diseases are most important. The spread of diseases can be aided very little, but it is within the power of everyone to protect and encourage the birds. Cultural remedies are often cheapest and most efficient. For field crops, except in rare cases, they are the only remedies practicable for the farmer to use. They often consist of plowing or cultivating the ground at a time most detrimental to the insects, of clearing away rubbish and remains of infested plants, and of growing varieties which are more or less immune from injury. Direct or artificial remedies are those in which we most commonly seek relief when we find an insect infesting our crops. They are really least important in the end for they give but temporary relief. They consist chiefly of poisoning, and picking and trapping with trap crops or piles of straw or other material which may be destroyed. There are two general classes of poisons employed, internal and external, or contact poisons. The former are used for all insects which feed where they are accessible and have biting mouth parts such as caterpillars, beetles, etc. These external poisons are usually some of the arsenicals, that is, chemicals which contain arsenic in some compound, as the arsenates and arsenites, lear arsenate, lime arsenite, paris green, etc. Care must be taken with the most of them that the plant is not injured. Many of the cultivated plants are very sensitive to soluble arsenicals. Lead arsenate is much the least soluble of the arsenicals, and therefore the least injurious to plants with delicate foliage. Paris green, Scheele's green, and London purple are cheaper but variable in composition and somewhat soluble. Paris green should be used with twice its weight of lime to lessen the injury. Lime and soda arsenites are constant, but also soluble enough to be unsafe for delicate plants. Besides being the least injurious, lead arsenate has the advantage of adhering better than other arsenicals. It may be bought in powdered form as disparene ready to use, the same as Paris green. As it has a tendency to lose its strength in powdered form, it is much better prepared when used at once. It is then also more finely divided and can better be distributed over the plant. Lead arsenate is thrown down as a whitish flocculent precipitate upon pouring together clear solutions of lead acetate (sugar of lead), 13½ cents per pound, and sodium arsenate, 20 cents per pound. The lead and sodium exchange places, forming the insoluble poisonous lead arsenate and sodium acetate. This latter compound is entirely harmless to plants, as is also lead acetate. It is very important that an access of this be used to be sure that none of the arsenate remains in combination with the sodium in which form it is soluble. The proportions usually given are twelve ounces of lead acetate to four ounces of sodium arsenate, which insures an access of the former. These amounts are sufficient for from fifteen to fifty gallons of spray. Fifty gallons of spray will cost at retail prices about 45 or 50 cents for the chemicals; at wholesale, 15 cents.

Each of the two chemicals should be dissolved separately, then poured together. Arsenite of soda is the chiefest of the arsenicals. It is prepared by boiling together for fifteen minutes or more one-half pound white arsenic, two pounds sal soda and two quarts of water. This equals one pound of paris green. Vessels used in its preparation should not be used for other purposes as they are very poisonous. This mixture is perfectly soluble, hence unsafe to use unless added to Bordeaux mixture or mixed with lime. Two pounds of lime are required for the above named amounts and is better boiled for fifteen minutes. Where Paris green is used from six ounces to one pound required for fifty gallons of water, the proportions depending upon the insect for which it is used. The other class of poisons consists of various oils and various caustic preparations which kill the insects by contact. They are more likely to be more injurious to the plants and difficult to apply. Their chief use is against insects like scales, plant lice, and other true bugs, all of which have sucking mouth parts. Since they eat none of the surface but only suck the juices, they can not be poisoned with arsenicals. For the scale insects the lime-sulphur wash is considered best. (For winter use only it destroys all eggs or spores of any disease with which it comes in contact, and trees so treated have bright, healthy appearance throughout the season.) Directions for preparing it may be found in the spraying calendar issued by the experiment station at Ames and sent to those asking for it. Kerosene emulsion, or whale soap, is commonly used for plant lice, or for summeh treatment of scales or similar insects. Kerosene emulsion is made by dissolving one-half pound of Ivory soap in one gallon of hot water, add two gallons of kerosene and churn until a creamy emulsion is formed. This should be diluted fifteen or twenty times for growing trees. Small trees infested with colonies of plant lice in the tops can be easily treated by bending over the limbs and dipping them in a strong tobacco decoction, made by boiling one pound of tobacco stems in two gallons of water. Formulae for other contact sprays may be found in the spraying calendars. None of the sprays or other direct methods are practicable for field crops except in unusual cases. The cultural methods are much more important here. Cut worms, of which there are many species of various colors, are the larvae of certain night flying moths. Most of them spend the winter in the ground. This fact enables us to hold them in check by fall plowing, which exposes them to their enemies and to freezing. Wire worms, which are the larvae of the click beetle, and white grubs which are the larvae of the big May beetles, commonly seen early summer evenings, are amenable to the same treatment. The corn ear worm, the larvae of a moth so often found in the ears of sweet corn, spends the winter in the ground and readily yields to fall plowing. The corn root louse is unable to re-enter the ground if turned up with a plow late in the fall. This little insect lives upon the roots of corn, sucking the juices, thus giving the plant a sickly appearance. It is especially interesting because of its relationship to certain ants which distribute it from plant to plant. The louse receives this transportation and careful protection from the ant, and in return secretes honey dew for the ants to live upon. The chintz bug has always occurred in the east but never in sufficient numbers to become a pest, as it has in the middle west. Dry weather favors it and damp, warm weather checks it; that is, damp weather favors the spread of a fungus disease which is one of the main factors in controlling its abundance, while dry weather retards it. This disease is the cause of the sudden disappearance of bugs at times. Attempts to distribute it have little value, first because the disease will not thrive unless the weather is favorable, and second because some of it is nearly always present where the bugs are prevalent or appear before it can be secured from a distant source. Adults hibernate under trash and grass in the fields or near them. When the young bugs are very numerous and are migrating from one field to another they may be checked by various barriers, such as a row of boards on edge, a line of tar, a furrow with smooth, steep sides, etc. The same barriers might be used for army worms or other insects which migrate over ground. Fall plowing of stubble fields destroys the larvae of the joint worms and straw worms which affect small grains. Grasshoppers, which are sometimes of economic importance, spend the winter in the egg stage. Plowing six inches deep destroys them. Adults may be poisoned by spraying the weeds about the field with a solution of white arsenic, one pound to fifty gallons of water, which will be serious for the weeds also. Fall plowing and clean culture are as important for the garden as for the field. The trash heaps should be burned early in the spring, as they furnish an attractive place for various insects to hibernate. In addition to fall plowing, poisoned bait may be used for cut worms. It consists of one pound of white arsenic, two quarts of syrup and fifty pounds of bran made into a mash. This is scattered over the ground, preferably before the plants are up. Tarnished plant bugs and curious little leaf hoppers are small sucking insects infesting various plants and sometimes become quite injurious. Adults hibernate under litter and trash. The destruction of their hibernating places is the only remedy. The squash bug requires the same treatment, with especial care taken to destroy the old squash vines in the fall. Insects which eat the leaves are combated best with arsenicals.

The Colorado potato beetle and the long striped bettle which also feeds upon other garden plants require about three times as much poison as the caterpillar. Paris green is commonly used. It is a salt of copper and to a certain extent acts as a fungicide, a thing usually needed by potatoes because of their susceptibility to fungus disease. The flea beetles which eat little round holes in potato and tomato leaves are readily controlled by any of the sprays. Most of the damage they do is in furnishing an entrance for the spores of the many potato diseases. This must always be taken into account in estimating the injury to a plant from any insect. Adults of the pea and bean weevil hibernate within the seed, none of which should be allowed to remain in the garden. Before planting fumigate infested seed by placing in a closed vessel like a fruit jar and pouring in one teaspoonful of carboni bisulphide to one gallon of beans. The jar should remain closed for forty-eight hours. This treatment will kill the weevils without injuring the seed. Care must always be taken in using this gas, as it is very explosive when ignited. Beans not used for seed should be fumigated or heated. Cabbage worms of which there are two species may be held in check by spraying or dusting with some of the arsenicals. When the heads are about ready to use pyretheum or hellebore mixed with three parts of flour or lime may be used. These are just as effective for the insects and less injurious to man than the arsenicals. These materials may always be used on fruit or leaves which are ready to use. A bacterial disease destroys many of the cabbage worms. Sometimes not a healthy one can be found. In considering injurious orchard insects.the codling moth which causes our wormy apples easily demands first place. There are two generations and sometimes a part of a third in our locality. The second one does the most damage and is most difficult to combat. On this account it is most important to destroy the first generation as completely as possible so there will be fewer eggs laid for the second. One-half pound of paris green or its equivalent in arsenite of lime, or still better, of lead arsenate, in fifty gallons of water applied just after the petals fall and again ten days later will destroy most of the young larvae. Some make five applications ten days apart. The first two are the most important, especially if made before the calyx or blossom end of the apple closes. The young larvae of the first generation almost invariably do their first eating in this end. For a few days just after the petals fall, the calyx stands open, forming a cup-like receptacle, which catches the poison; later it closes and remains closed. To supplement these sprayings the trees may be banded just beneath the limbs with strips of burlap or other dark colored material. The bands should be about a foot wide and long enough to reach around the tree twice. A small nail with its head nipped off and driven into the tree is convenient for holding the ends of the band. This forms an attractive place for the larvae to pupate and most of them which escape the poison will spin their cocoons under these bands. They then may be easily destroyed by unwrapping the bands every week and crushing them. Removing dead stubs, filling rotten cavaties, and scraping off the rough bark compels the insects to hibernate where more of them are destroyed by birds. Woodpeckers, chickadees and similar birds are most important in reducing the numbers of this pest. These birds deserve encouragement. The entomologist of the Ohio station strongly recommends placing a little feed in the orchard to attract them. The adult codling moth is a night flying insect but it is not attracted to light, consequently can not be caught in any of the patent moth traps. Apple tree borers are serious pests in places. Their presence is usually indicated by sawdust-like castings worked out about the base of the tree. Unless destroyed they are likely to girdle the tree. The best remedy is to dig them out with a knife or run a small wire into them. A little kerosene injected into the hole will usually reach and kill the borer. As a preventative remedy a deterrent wash may be prepared by adding washing soda to soft soap and making a mixture of the consistency of thick paint. One application of this to the body of the tree each month for three months, beginning the first of June, will prevent eggs being laid upon it.

The apple tree tent caterpillar and the tentless tent caterpillar, like other leaf-eating insects, are easily poisoned. Any old webs or peculiar masses noticed on the limbs in winter are probably egg masses of some insect and should be cut off and destroyed. Plums and cherries are subject to the same or similar borers as the apple and they are susceptible to the same treatment as those of the apple. In addition there is another group of insects which belong more especially to the plum, but are often equally injurious to the apple. These are the curculios, which cause wormy plums and cherries; and disfigure the apples, making them knotty and ill-shaped. These insects can be controlled to but a limited extent by spraying. Just before the buds open is the most effective time to spray for these insects. An extra strong mixture should be used as the insects are not easily poisoned and feed comparatively little upon the surface. They are easily jarred off upon a sheet and can thus be destroyed, or a flock of chickens may be trained to pick them up off the ground. The most practicable remedy for a large orchard is clean cultivation. The larvae pupate within one or two inches of the top of the ground and are so sensitive to sunlight that a short exposure to it kills them. Orchards which receive frequent shallow cultivation for five or six weeks beginning about the middle of July or a little earlier, are but little infested by these insects.

In a paper of this length, considering such a large subject, only a few of the most injurious insects can be treated at all and they in a most meager manner. Many injurious insects found here to a greater or less extent have not even been mentioned. Many remedies have not been fully discussed or even mentioned. As a rule only those applicable on a commercial scale have been given. Many ingenious devices may be invented by the gardener for the protection of a few plants. It has been assumed that the author cared nothing about the peculiar anatomy and interesting physiology of these little animals, although perhaps a paper dealing with these subjects would be of more real value than one attempting to deal with the remedies first. In summing up, first importance must be given clean culture, a remedy almost universal, most easily applied and valuable in other ways. A second remedy almost as universal and easier to apply is simply to recognize and encourage our friends, the birds. Even though these means be used one will often have to resort to more direct remedies. The success of most of these depends upon their being applied properly and at just the right time. The farmer, gardner or orchardist can better fit himself for combating the insect pests of his crops by studying their life histories and he can make these a most interesting study. Bulletins may be had for the asking from the experiment stations and the United States Department of Agriculture. A monthly list of all the publications of the department is sent to those requesting it. From this one may send for such bulletins as interest him when first published. Last of all, the agriculturist can help himself as well as others, by encouraging and supporting the scientists who are tediously working out the life histories of insects and the relation of them to each other and to plants, and who are untiringly searching the globe for the natural enemies of our most injurious imported insects.

HORSE BREEDING ON THE FARM.

Wallaces' Farmer.

There has been good money in growing horses for a number of years past. There is likely to be good money in it in the future. The price of horses will no doubt advance or decline in about the same ratio as any other products; but the man who will engage in it intelligently and keep right on will not be in danger of having the sheriff hang out the red flag on his premises.

What do we mean by intelligent horse breeding? First determine on the kind of horses that you intend to grow. That will depend on your tastes, on the character of the farm, on your ability as a trainer of horses, and to some extent on the kind of horses usually grown in your section. There is good money in growing coach horses, in growing saddle horses, good money for the skillful trainer in growing trotters or roadsters.

We believe the best money for the average farmer is in growing draft horses, provided he has a good farm and knows how to handle it; for the draft horse is not the product of the desert or of the mountain or of poor, thin land in any country on the face of the earth. He must have rich land that grows big, rich grass.

If the farmer determines to grow draft horses, the next thing to do is to fix on the breed. He may grow Percherons or Normans or Belgians or Shires or Clydesdales or Suffolk Punch. The differences between these types of horses is mainly the difference in their environmnt in their native country. All grow on rich land with plenty of bone-making material.

Which one of them he should select is a matter of taste and also a matter of popularity in the neighborhood; but having selected one, we would continue in that line. While there is less danger from cross-breeding of the different types of horses mentioned than in cross-breeding in other lines of stock, we would nevertheless stick as closely as possible to the breed with which we began. If, however, the farmers in the neighborhood are breeding some other kind, we would not hesitate to adopt the popular breed and stick to that in the future. It is a great advantage to the farmer in making sales if the farmers in a township or county have adopted any one of the breeds.

The next important thing is selecting the sire. We speak of this particularly because that will be one of the duties of the horse breeder in the next month or two now. First, we would study the sires in the neighborhood carefully, and select one of the best draft conformation and free from hereditary defects, such as spavin, curb, ringbone, ophthalmia, etc.

If we were satisfied with his individual merit, we would look very closely into the pedigree. Don't let any man flash a piece of paper with a big seal on it and call it a pedigree. It is an open secret that there are quite a number of bogus herd registers that issue so-called pedigrees that are of no earthly value. See to it that the horse is not merely eligible to record, but is actually recorded in some stud book recognized by the government.

The General Assembly of the State of Iowa has recently enacted a law which will protect farmers from imposition along this line. It is published elsewhere in this issue.

Thousands of dollars of good money have been thrown away in the past by farmers who have started well in the draft horse line, thought they must have a little more speed and crossed these draft mares with a standard bred horse, and then, thinking to add a little more style, probably used a Morgan or Arabian after the first cross, and as a result have the farm well stocked with mongrels, too light to pull, to slow to trot, practically good for nothing; horses that no man cares to buy in the market. It is time to avoid this common mistake in the future. Don't be afraid to engage in horse breeding to the limit of the good, sound brood mares needed on the farm, and to no greater extent than this. But breed intelligently, and, having bred intelligently, feed intelligently, and they will make you good money.

WEANING, FEEDING, AND HANDLING COLTS.

Dr. J. C. Curryer, in Wallaces' Farmer.

So much depends on the mature usefulness and consequent value of horses on their very early education, weaning, feeding, and handling, that the subject can not be dealt with lightly, but with the greatest care in the essential particulars, illustrations, and as far as possible, all the details that go to make up success and profit in the business of horse production.

Weaning time, all things considered, is the most critical period of the colt's existence in a general way; but if the little fellow has been handled as recommended in the previous chapter—made to believe that man is his friend instead of an enemy—half of the difficulties of weaning are already overcome.

The age of weaning depends on so many conditions that it is hard to lay down any specific time. Some colts have been so well nourished and grown that they may be weaned at four months of age better than others at six months.

The different methods of weaning all have their advocates, and of course every adherent to any specific plan is sure his is the best until the loss of a colt by accident or so badly "stunted" in its growth that he is finally obliged to try some other.

As the final separation of dam and foal is the aim, it is probably (except under peculiar circumstances) best to make it in the beginning and never let them together again until fully weaned and the dam's milk properly dried up by hand milking.

The weaning process should begin in the morning, by taking the dam and colt out of sight and hearing of each other, and where two or more colts are to be weaned it is best to put them in pairs (two together) in box-stalls by leading the dams into the stalls with their foals and then taking the mares out and leaving the colts together.

"Two is company and three is a crowd" is the reason of putting two together, as they will be company for each other, but three or more will fight. One young colt alone in a box-stall is a veritable prison pen for it, and if something desperate is not done soon it is really a wonder.

Watch the colts closely the first day, but don't try to do anything with them until along towards night, when it is a good plan to take some warm skim-milk sweetened, in a shallow pan, and offer it to them to drink, but the chances are two to one that they will refuse it, which should in nowise discourage the undertaking. Try again by getting the pan under the colt's nose and suddenly raising it, which will dip the nose into the milk, when the pan should be taken away and the colt left to work the matter out for itself. You will see the colt licking the milk off its lips and around its mouth, seeming interested and more contented, when it may be tried again, and so on until within a few minutes the colt will be drinking freely if it is thirsty. Water should never be offered the weaning colt until it has learned to drink warm, sweetened skim-milk, and then that important part of the work of growing the colt continuously until maturity is well started.

Warm separator milk for weanling colts, together with oats, bran, sweet hay, and every-day exercise, is the surest road for well developed, sound, serviceable, and valuable horses that has ever been tried by the writer in an experience of more than half a century.

Sweet skim-milk for weanling colts in small quantities (one or two quarts twice a day) with their grain and hay seems to just fill out the demands of nature in keeping the colt growing continuously, without the usual stand-still, check in growth, or stunted condition too often met with in connection with the weaning period. A little skim-milk (never whole milk) and less water for the colts will keep them as round as logs, their coats smooth, legs clean, and spirits vivacious.

The amount of grain for the weanling colt should be governed by the size, appetite, and the digestive capacity of the individual colt, amounting to what it will eat up clean and come hungry to the next meal, without affecting the skin, legs, or bowels. Better feed too little than too much. A set-back from overfeeding always means loss in growth and delay in maturity. Remember that high feeding with horses or colts demands plenty of exercise in connection, and the two together, combined with regularity, means the best for the colts and their owners.

As soon as the colts begin to drink skim-milk and eat grain their exercise should be made a special feature every day for at least one or two weeks, which will be readily conceded by everyone who ever tries it properly to be the very best time spent with the colts (subsequent to the first few days of their life) for useful and tractable horses.

The best exercise for the weanlings is by driving, single, double, or in fours, as occasion and time requires.

The home-made cart is without question the most valuable vehicle for the purpose I have ever devised or used for handling colts or even bad-acting horses. The attachments are for the little colts and can be used for driving in pairs or fours.

The association of an experienced horse in the shafts makes the harness work for weanling colts a great pleasure, and anybody who can drive the horse can drive one, two, or four colts at one and the same time.

The lessons should be short, but regular once or twice every day while at it. The object is three-fold: First, the necessary exercise; second, the entertainment of the colts in association with man instead of their dams; and, third, the invaluable lessons which can be given with little or no trouble.

The natural laws are the governing principle in driving the weanling colts in connection with a mature animal: First, the stronger ruling the weaker; second, the colts learn by example and association with those of riper age. Besides, the horse is practically the teacher and the man on the cart the superintendent or director.

The colts can be readily taught the following important and most valuable lessons, viz., to start at the word of command; to stop at the word "Whoa;" to walk or trot, or run by simply controlling the shaft horse; to drive over bridges, bad places, over ditches, through streams; hurry up or slow down at the word; not to frighten at noises behind them, umbrella (place of top buggy), etc., all with kind treatment.

FINANCIAL STATEMENT OF COUNTY FARMERS' INSTITUTES' IN IOWA

FOR FISCAL YEAR, JUNE 30, 1905 TO JULY 1, 1906.

Counties	Receipts			Disbursements									
	State aid	Membership fees, and other sources	Total	Speakers	Judges	Premiums				Printing advertising and postage.	Hall rent	Other expenses not itemized	Total
						Corn	Live Stock	Poultry	Miscellaneous				
Adair	$ 75.00	$ 123.10	$ 198.10	$ 45.00	$ 39.00				$ 70.00	$ 24.10	$ 20.00		$ 198.10
Adams	41.40		41.40	25.00						10.00		$ 6.40	41.40
Benton	73.67		73.67	18.77						24.90	20.00	10.00	73.67
Black Hawk	75.00		75.00	39.00		$ 10.00	$ 5.00			14.35		6.65	75.00
Boone	42.29		42.29	15.91	12.75					.40	6.00	7.23	42.29
Bremer	75.00	12.15	87.15	76.65						2.00	6.00	2.50	87.15
Buchanan	75.00		75.00	12.00					25.00	13.00	25.00		75.00
Buena Vista	75.00	120.25	195.25	43.00	10.00				67.25		75.00		195.25
Butler	75.00	36.55	111.55	86.00						6.65	17.50	1.40	111.55
Calhoun	75.00	13.24	88.24	31.20						22.42	10.00	24.62	88.24
Carroll	75.00	463.26	538.26	53.89					313.00	82.00	61.00	28.37	538.26
Cedar	65.18		65.18	45.50						5.25	14.43		65.08
Cerro Gordo	75.00	30.00	105.00	105.00									105.00
Cherokee	75.00	100.46	175.46	43.60		66.50				14.11	24.00	27.25	175.46
Chickasaw	75.00		75.00	48.31						6.69	20.00		75.00
Clay	75.00	138.17	213.17	47.64				25.00	17.25	10.28	100.00	13.00	213.17
Clayton	68.63		68.63	43.60						4.88	20.00	.15	68.63
Clinton	75.00	2.25	77.25	21.00	5.00					6.00	12.00	33.25	77.25
Dallas	75.00	33.58	108.58	20.50	19.48	58.50				10.10			108.58
Decatur	75.00		75.00	54.96	11.65					2.00		6.39	75.00
Delaware	75.00	44.00	119.00	100.00						8.00	5.00	6.00	119.00
Dickinson	75.00	40.30	115.30	49.05						9.00	25.00	32.25	115.30
Dubuque	75.00	50.00	125.00	40.00					50.00	5.00	15.00	15.00	125.00
Emmet	75.00	.77	75.77	35.00		6.50				5.75		28.52	75.77
Floyd	75.00	50.20	125.20	44.50		20.00			8.00	10.20	35.00	7.50	125.20
Franklin	75.00	100.75	175.75	53.51					102.00	15.24		5.00	175.75
Fremont	75.00		75.00	75.00									75.00

Greene	60.00		60.00		3.50	5.00				11.50	15.00	25.00	60.00
Grundy	66.00		66.00	30.00						4.50	18.00	13.50	66.00
Guthrie	75.00	8.00	83.00	32.00					14.00	10.50		26.50	83.00
Hancock	75.00		75.00	66.10					2.50	6.40			75.00
Hardin	55.18	.30	55.48	26.73						10.75	17.00	1.00	55.48
Harrison	65.85		65.85	33.10						6.00		26.75	65.85
Howard	74.20		74.20	59.00					3.00	4.20		8.00	74.20
Humboldt	75.00	3.55	78.55	27.05						8.00	15.00	28.50	78.55
Ida	75.00	17.30	92.30	77.80						14.50			92.30
Iowa	75.00	1.10	76.10	42.91	1.00					8.61	6.00	17.58	76.10
Jackson	75.00		75.00	49.34						4.50	15.00	6.16	75.00
Jasper	67.02		67.02	30.00	3.90					33.12			67.02
Jefferson	75.00		75.00	39.40						12.60	8.00	15.00	75.00
Johnson	74.51		74.51	44.26						30.25			74.51
Keokuk	75.00		75.00	59.00						11.50		4.50	75.00
Kossuth	75.00	22.35	97.35	80.85						3.00	7.50	6.00	97.35
Lee	59.15		59.15	39.85						8.15	7.00	4.15	59.15
Linn	75.00	19.85	94.85	59.00						13.90	20.70	1.25	94.85
Louisa	75.00		75.00	22.50	27.90						15.00	9.60	75.00
Lucas	14.55		14.55	10.55						4.00			14.55
Lyon	75.00	145.64	220.64	45.00					18.25	70.00	35.00	52.39	220.64
Madison	75.00	13.25	88.25	10.00	6.00	59.00				3.75		9.50	88.25
Mahaska	75.00	334.75	409.75	25.00					75.00	251.00	40.00	18.75	409.75
Marion	75.00		75.00	10.75						43.25		21.00	75.00
Marshall	75.00	2.80	77.80	53.85						4.80	9.00	10.15	77.80
Mills	75.00	18.38	93.38	23.50	15.00					9.88	45.00		93.38
Mitchell	75.00	2.70	77.70	44.45						3.00	25.00	5.25	77.70
Monona	75.00	122.76	197.26	142.51						34.75	20.00		197.26
Monroe	75.00		75.00	15.00						55.00		5.00	75.00
Muscatine	75.00	10.00	85.00	46.50					14.50	4.00	15.00	5.00	85.00
O'Brien	75.00	2.30	77.30							5.00	35.00	37.30	77.30
Osceola	75.00		75.00	41.30						5.00	10.00	18.70	75.00
Page	75.00	4.90	79.90	35.70						19.20	25.00		79.90
Palo Alto	75.00	66.09	141.09	32.50					46.75	12.75	30.00	19.09	141.09
Pocahontas	75.00	7.22	82.22	28.25					20.00	11.50	20.00	2.47	82.22
Polk	75.00	.90	75.90	45.40						3.50	27.00		75.90
Poweshiek	73.00		73.00		53.00						20.00		73.00
Ringgold	75.00	38.06	113.06	46.20					39.00	7.31	15.00	5.55	113.06

FINANCIAL STATEMENT OF COUNTY FARMERS' INSTITUTES' IN IOWA—CONTINTED.

Counties	Receipts			Disbursements									
	State aid	Membership fees, and other sources	Total	Speakers	Judges	Premiums				Printing, advertizing and postage.	Hall rent	Other expenses not itemized	Total
						Corn	Live Stock	Poultry	Miscellaneous				
Sac	75.00	9.42	84.42	34.22						16.10	30.00	4.10	84.42
Scott	71.95		71.95	36.75		6.00		6.00		6.75		16.45	71.95
Sioux	75.00	.35	75.35	56.00						8.85	3.00	7.50	75.35
Story	44.25		44.25	24.38					12.00	4.87		3.00	44.25
Tama	75.00		75.00	48.00						3.00	24.00		75.00
Taylor	22.50		22.50	12.00						10.50			22.50
Union	50.00		50.00	12.50		10.00				13.35		14.15	50.00
Van Buren	62.60		62.60	35.20		6.00				5.00	10.00	6.40	62.60
Warren	75.00	12.20	87.20	54.10					16.00	8.60	4.50	4.00	87.20
Washington	75.00	9.15	84.15	53.50						15.00		15.65	84.15
Wayne	66.53		66.53	45.25						9.28	12.00		66.53
Winnebago	75.00	18.25	93.25	60.00		14.00				17.00		2.25	93.25
Winneshiek	55.00		55.00	40.00						5.00	5.00	5.00	55.00
Worth	75.00	4.81	79.81	64.81							15.00		79.81
Wright	75.00	122.31	197.31	84.47		10.00				36.64	51.00	15.20	197.31
Total	$5,623.46	$2,377.22	$8,000.68	$3,410.12	$ 208.18	$ 271.50	$ 5.00	$ 31.00	$ 913.50	$1,221.93	$1,180.63	$ 758.82	$8,000.68

PART XI.

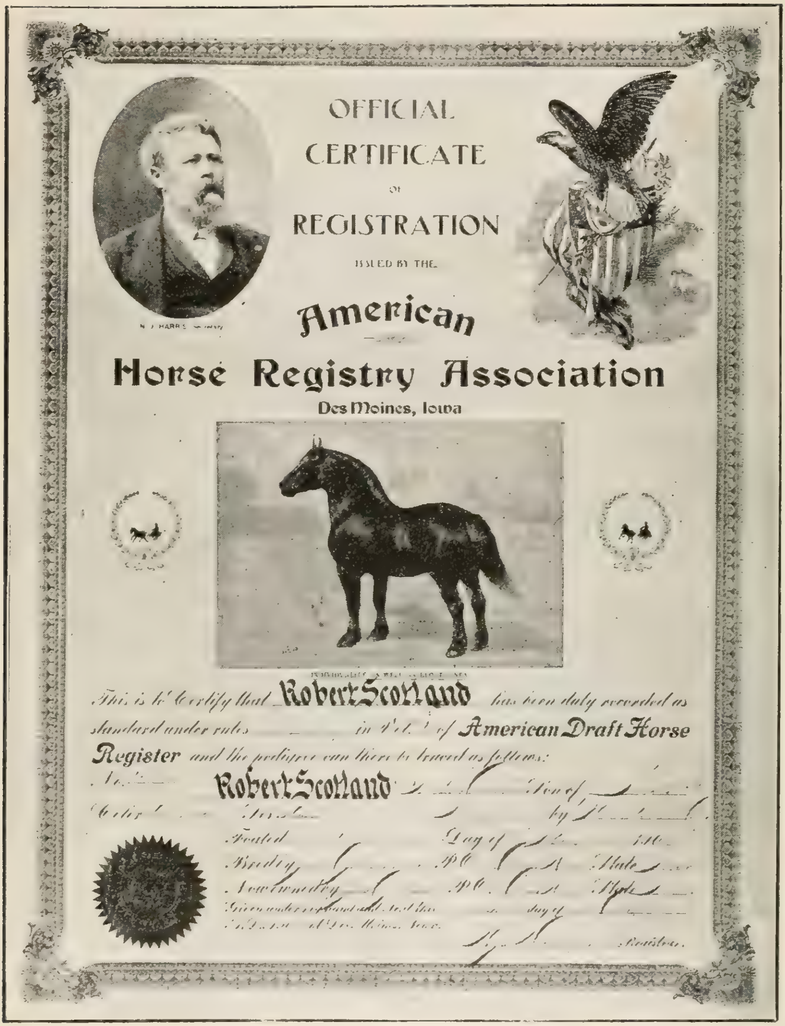
Horse Breeding Industry In Iowa

Law Governing State Enrollment of Stallions Standing in Public Service, With List of Certificates Issued to May 1st, 1907.

Prior to the enactment of Chapter 98, Laws of the Thirty-first General Assembly, but few restrictions were placed upon the owner or keeper of stallions kept for public service, consequently not much effort was made by the mare owner to ascertain whether the horse he was going to breed to was pure bred and registered, this being especially true with regard to the draft horse. A very large number of grade or "scrub" stallions were being used, the large part of their patronage being secured by reason of the low service fee. Again the owner of the "grade" or "scrub" stallion would have his advertisements so deftly worded that no one but an expert on breeding would ever doubt but what the stallion so advertised was anything else but a pure bred horse.

Since the passage of the stallion service law the farmer and breeder has taken a renewed interest in his horses. While hundreds, and, I might say, thousands, of them still breed their mares to "grade" or "scrub" horses knowingly, others absolutely refuse to breed to a stallion without the owner or keeper can show a state certificate, which is a guarantee that the stallion is registered in one of the recognized studbooks.

The State Department of Agriculture has received a great many certificates of registration issued by what are commonly known as "fake studbook associations." These associations have been unusually active within the past few years of high priced horses. The purpose of these associations is to register horses for breeders or dealers who have failed to have the pedigrees accepted by a recognized association. Only one association so far has been located in Iowa. These fake registry associations issue a very attractive certificate, with seals and ribbons, all of which help to fool the mare owner, who seeks to learn the breeding of the stallion he desires to patronize.



OFFICIAL
CERTIFICATE
OF
REGISTRATION
ISSUED BY THE

American
Horse Registry Association
Des Moines, Iowa

This is to Certify that **Robert Scotland** has been duly recorded as standard under rules [illegible] in Vol. [illegible] of **American Draft Horse Register** and the pedigree can there be traced as follows:

No. [illegible] **Robert Scotland** [illegible] Son of [illegible]

Color [illegible] by [illegible]

Foaled [illegible] Day of [illegible] 190[illegible]

Bred by [illegible] P.O. [illegible] State [illegible]

Now owned by [illegible] P.O. [illegible] State [illegible]

Given under our hand and seal the [illegible] day of [illegible] at Des Moines, Iowa.

[illegible] Registrar.

Facsimile of certificate issued by one of the non-recognized associations.

So many of these fake associations became established, and were doing such a lively business, that the Bureau of Animal Industry of the United States Department of Agriculture found it necessary to make a careful investigation of this subject, with the result that only breeding associations having studbooks of known merit received the stamp of approval by the Department. (A list of the recognized studbooks we publish herewith.)

The assessment report received by the State Auditor to July 1, 1906, gives the total number of stallions in Iowa as 6,079. The new Stallion Service law took effect July 1, 1906. From this date to May 1, 1907, 3,253 State certificates had been issued. This goes to show that a little less than 50 per cent of the stallions used in the State are "grades" or "scrubs." While this looks bad, it is about the estimate placed by the Secretary, when the bill was up for discussion in the Senate Agricultural Committee. It is a blot upon the horse-breeding interests of our State, or any other State, that such a condition of affairs should exist, and we hope the stallion law will make it so uncomfortable for the owner or keeper of a "grade" stallion that he will quit the business. However, the blame does not rest entirely with the owner of the "scrub" stallion, for there are many mare owners who would not think of using anything but a pure bred and registered bull, boar or ram on his farm, but will breed his good draft mares to a "scrub" stallion, because he can do so cheaply.

Iowa leads in the number of pure bred and registered horses. In Wisconsin, where the law requires certificates to be issued to both pure bred and "grades," the number issued shows that in that State they are using about 60 per cent "grades" to 40 per cent pure breds.

The law enacted by the Thirty-first General Assembly was amended by the Thirty-second General Assembly, and now reads as follows:

LAWS OF IOWA.

A BILL for an act to repeal Chapter Ninety-eight (98), Acts of the Thirty-first General Assembly, and to enact a substitute therefor, relative to the registration and publication of pedigrees.

Be it Enacted by the General Assembly of the State of Iowa:

SECTION 1. That Chapter Ninety-eight (98) of the Acts of the Thirty-first General Assembly be, and the same is hereby repealed, and the following enacted in lieu thereof:

SEC. 2. Any owner or keeper of any stallion, kept for public service, or any owner or keeper of any stallion kept for sale, exchange or transfer, who represents such animal to be pure bred, shall cause the same to be registered in some studbook recognized by the Department of Agriculture at Washington, D. C., for the registration of pedigrees, and obtain a certificate of registration of such animal. He shall then forward the same to the Secretary of the State Board of Agriculture of the State of Iowa, whose duty it shall be to examine and pass upon the correctness or genuineness of such certificate filed for enrollment. In making such examination, said Secretary shall use as his standard the studbooks recognized by the Department of Agriculture at Washington, D. C., and shall accept as pure bred any animal registered in any such studbooks. And if such registration is found to be correct and genuine, he shall issue a certificate under the seal of the Department of Agriculture, which certificate shall set forth the name, sex, age and color of the animal, also the volume and page of the studbook in which said animal is registered. For each enrollment and certificate he shall receive the sum of one dollar, which shall accompany the certificate of registration when forwarded for enrollment.

SEC. 3. Any owner or keeper of a stallion for public service, who represents or holds such animal as pure bred, shall place a copy of the certificate of the State Board of Agriculture on the door or stall of the stable where such animal is usually kept.

SEC. 4. Any owner or keeper of a stallion kept for public service, for which a State certificate has not been issued, must advertise said horse or horses by having printed handbills, or posters, not less than five by seven inches in size, and said bills or posters must have printed thereon immediately preceding or above the name of the stallion, the words "grade stallion," in type not smaller than one inch in height, said bills or posters to be posted in a conspicuous manner at all places where the stallion or stallions are kept for public service.

SEC. 5. If the owner of any registered animal shall sell, exchange or transfer the same, and file said certificate, accompanying the same with a fee of fifty cents, with the Secretary of the State Board of Agriculture, who shall, upon receipt of the original State certificate, properly transferred, and the required fee, issue a new certificate to the then new owner of the animal. And all fees provided by this act shall go into the treasury of the Department of Agriculture.

SEC. 6. Any person who shall fraudulently represent any animal, horse, cattle, sheep or swine, to be pure bred, or any person who shall post or publish, or cause to be posted or published, any false pedigree or certificate, or shall use any stallion for public service, or sell, exchange or transfer any stallion, representing such animal to be pure bred, without first having such animal registered, and obtaining the certificate of the State Board of Agriculture as hereinbefore provided, or who shall violate any of the provisions of this act, shall be guilty of a misdemeanor, and be punished by a fine of not more than one hundred dollars, or imprisoned in the county jail not exceeding thirty days, or both such fine and imprisonment.

Approved March 30, 1907.

The States of Wisconsin and Minnesota have similar laws. They are more stringent, however, in that they provide that no stallion having any hereditary or transmittible unsoundness, or disease, shall be permitted to be used for public service; cataract, amaurosis, laryngeal, hemiplegia (roaring or whistling), chorea (St. Vitus' dance, crampness, shivering, springhalt), bone spavin, ringbone, sidebone, glanders, farcy, maladie du coit, urethral gleet, mange, melanosis and curb, when accompanied by curby hock.

STUDBOOKS RECOGNIZED BY THE UNITED STATES DEPARTMENT OF AGRICULTURE.

HORSES.

American Books of Record.

American Trotter	American Trotting Register.	American Trotting Register Association, Wm. H. Knight, secretary, 355 Dearborn street, Chicago, Ill.
Belgian Draft.	American Register of Belgian Draft Horses.	American Association of Importers and Breeders of Belgian Draft Horses, J. D. Conner, Jr., secretary, Wabash, Ind.
Cleveland Bay	American Cleveland Bay Studbook.	Cleveland Bay Society of America, R. P. Stericker, secretary, 80 Chestnut avenue, West Orange, N. J.
Clydesdale ...	American Clydesdale Studbook.	American Clydesdale Association, R. B. Ogilvie, secretary, Union Stock Yards, Chicago, Ill.
French Coach.	French Coach Horse Register.	French Coach Horse Registry Company, Charles C. Glenn, secretary, Columbus, Ohio.
French Coach.	French Coach Studbook.	French Coach Horse Society of America, Duncan E. Willett, secretary, Maple avenue and Harrison street, Oak Park, Ill.
French Draft..	National Register of French Draft Horses.	National French Draft Horse Association of America, C. E. Stubbs, secretary, Fairfield, Iowa.
German Coach.	German, Hanoverian, and Oldenburg Coach Horse Studbook.	German, Hanoverian, and Oldenburg Coach Horse Association of America, J. Crouch, secretary, Lafayette, Ind.
Hackney	American Hackney Studbook.	American Hackney Horse Society, A. H. Godfrey, secretary, Tichenor-Grand Bldg., 61st street and Broadway, New York, N. Y.
Morgan	American Morgan Register.	American Morgan Register Association, H. T. Cutts, secretary, Middlebury, Vt.
Oldenburg	Oldenburg Coach Horse Register.	Oldenburg Coach Horse Association of America, C. E. Stubbs, secretary, Fairfield, Iowa.
Percheron	Percheron Studbook of America.*	Percheron Society of America, Geo. W. Stubblefield, secretary, Union Stock Yards, Chicago, Ill.
Percheron	Percheron Register......	The Percheron Registry Company, Chas. C. Glenn, secretary, Columbus, Ohio.
Percheron	The American Breeders' and Importers' Percheron Register.	The American Breeders' and Importers' Percheron Registry Company, John A. Forney, secretary, Plainfield, Ohio.
Saddle Horse..	American Saddle Horse Register.	American Saddle Horse Breeders' Association, I. B. Nall, secretary, Louisville, Ky.
Shetland Pony.	American Shetland Pony Club Studbook.	American Shetland Pony Club, Mortimer Levering, secretary, Lafayette, Ind.
Shire	American Shire Horse Studbook.	American Shire Horse Association, Charles Burgess, secretary, Wenona, Ill.
Suffolk	American Suffolk Horse Studbook.	American Suffolk Horse Association, Alex. Galbraith, secretary, Janesville, Wis.
Thoroughbred .	American Studbook......	The Jockey Club, James E. Wheeler, registrar, 571 Fifth avenue, New York, N. Y.

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* Absorbed interests of the American Percheron Horse Breeders' Association, May 9, 1904, whose certificates issued prior to that date only, signed by S. D. Thompson, as Secretary, will be recognized.

HORSES.

Foreign Books of Record.

Belgian Draft.	Studbook des Chevaux de Trait Belges.	Societe Le Cheval de Trait Belge, Chevalier G. Hynderick, secretary, Brussels, Belgium.
Boulonnaise*	Studbook des Chevaux de Trait Francais.	Societe des Agriculteurs de France, M. Henri Johanet, secretary, 8 Rue de Athenes, Paris, France.
Cleveland	Cleveland Bay Studbook..	Cleveland Bay Horse Society of Great Britain and Ireland, Thos. Curry, Jr., secretary, Morton Carr, Nunthorpe, R. S. O., England.
Clydesdale ...	Clydesdale Studbook.....	Clydesdale Horse Society of the United Kingdom of Great Britain and Ireland, Arch'd MacNeilage, secretary, 93 Hope street, Glasgow, Scotland.
East Friedland Coach	Ostfriesisches Studbuch...	Landwirthschaftlichen Hauptverein fur Ostfriesland.
French Coach.	Le Studbook Francais. Registre des Chevaux de Demi-Sang.	Commission des Studbook des Chevaux de Demi-Sang, Director-General des Haras, Ministere de l'Agriculture, Paris, France.
French Draft**	Studbook des Chevaux de Trait Francais.	Societe des Agriculteurs de France, M. Henri Johanet, secretary, 8 Rue d'Athenes, Paris, France.
Hackney	Hackney Studbook.......	Hackney Horse Society, Frank F. Euren, secretary, 12 Hanover square, London, W., England.
Hanoverian ...	Hanoverian Studbook.....	Hannoversche Stutbuch Commission, Freiherr V. Troschke, president, Hanover, Germany.
Holstein Coach	Gestutbuch der Holsteinischen Marschen.	Verband der Pferdeguchtvereine in den Holsteinischen Marschen, Martin Thormahlen, secretary, Moorhusen per Elmshorn, Holstein, Germany.
Oldenburg Coach	Oldenburger Stutbuch....	Verband der Zuchter des Oldenburger eleganten schweren Kutschpferdes, Justus Schussler, secretary-treasurer, Rodenkirchen, Oldenburg, Germany.
Oldenburg Coach	Stutbuch der Musteriandisch-Oldenburgischen Geest.	Zuchtverband des sudlichen Zuchtgebieties, J. W. Runge, secretary, Oldenburg, Germany.
Percheron	Studbook Percheron de France.	La Societe Hippique Percheronne de France, M. A. Thieux, secretary, Nogent-le-Rotrou, France.
Shire	Shire Horse Studbook....	Shire Horse Society, J. Sloughgrove, secretary, Hanover square, London, W., England.
Shetland Pony.	Shetland Pony Studbook.	Shetland Pony Studbook Society, Robert R. Ross, secretary, Balmoral Buildings, Aberdeen, Scotland.
Suffolk	Suffolk Studbook........	Suffolk Horse Society, Fred Smith, secretary, Rendelsham, Woodbridge, Suffolk, England.
Trakehnen ...	Ostpreussisches Stutbuch.	Landwirthshaftlichen Central - Verein fur Litauen und Masuren, C. M. Stoeckel, secretary, Insterburg, East Prussia.
Thoroughbred .	Australian Studbook.....	W. C. Yuille & Sons, Melbourne, Australia.
Thoroughbred .	General Studbook........	Weatherby & Sons, 6 Old Burlington street, London, W., England.
Thoroughbred .	Le Studbook Francais, Registre des Chevaux de Pur-Sang.	Commission des studbook des Chevaux de Pur-Sang, Directeur-General des Haras, Ministere de l'Agriculture, Paris, France.
Yorkshire	Yorkshire Coach Horse Studbook.	Yorkshire Coach Horse Society of Great Britain and Ireland, John White, secretary, The Grange, Appleton Roebuck, Bolton, Percy, R. S. O., England.

* See French Draft. ** See Boulonnaise.

The State Department of Agriculture can only recognize certificates issued by the associations herewith printed.

NUMBER AND CHARACTER OF CERTIFICATES ISSUED TO MAY 1, 1907.

Counties	American Trotter	Belgian	Cleveland Bay	Clydesdale	French Coach	French Draft	German Coach	Hackney	Morgan	Oldenbury Coach	Percheron	Saddle Horse	Shetland Poney	Shire	Suffolk	Thoroughbred	Total
Adair	8		1	4		1			1		5			11		2	33
Adams	5	2		3		2					30			3			45
Allamakee		5			1	1					7			1			15
Appanoose	3	1	1	6		1					6			4		1	23
Audubon	3	2		6		4	1				4			1			21
Benton	5	10			2	2					15			3			37
Black Hawk	7	3		3		1	1		1	1	11		1	5			34
Boone	6	8		3		9					5			1			32
Bremer	1	1		3		1			1		8						15
Buchanan	6					3					11			2			22
Buena Vista	5	1		3		1					12			4			26
Butler	2	4		1		1					9						17
Calhoun	8	5				2	1				17			8			41
Carroll	2	5				4					11				1		23
Cass	7	4		7		5	3		1		13		1	10	2		53
Cedar	4					6					6			8			24
Cerro Gordo	3	2									8			5			18
Cherokee	2	3				1					14						20
Chickasaw	8	2		12		2			1		20			2			47
Clarke	4	3		2		6		1		1	56			14			87
Clay	2	2		1	2						9			3			19
Clayton	2	3									10			3			18
Clinton	4	3				3					9		1	1			21
Crawford	3	5		1		6	1			1	9			1	1		28
Dallas	6	5				9	1				10	1		7			39
Davis	6			1		11			1		17						36
Decatur	2	5				3					6			9			25
Delaware	5	45		2			7	9			88			15			171
Des Moines	3					2					3			2			10
Dickinson	5			1							11			2			19
Dubuque	4	9		1							12			1			27
Emmet	4	2			1	2				1	10			1			21
Fayette	5	7				3	1				14			2			32
Floyd	2	5			2		1				17			2			29
Franklin	1	1		2		2	1		1		5			4			17
Fremont	1	1							1	1	10		1				15
Greene	3	5		1		3					15			2			29
Grundy	1	1		2		1		1		1	10						17
Guthrie	12	3		5	1	2		1			10			4			38
Hamilton	5	3		1	1				1		17	1	1	1			31
Hancock		5		2		1					7			1			16
Hardin	4	3		1		1			1	2	17			3			32
Harrison	9	3		2	2						9			2			27
Henry	7	1		5	1	8		1			14			12			49
Howard		9		4	1	1					6						21
Humboldt		1		3		1					9			3			17
Ida	7	3		1		3	1				10		1	3			29
Iowa	8	5		9	1	3	1				12			6			45
Jackson	7	7		1		1					12			1			29
Jasper	5	1		3	2	5					18			3			37
Jefferson	16	3		3		14			1		19			10			66
Johnson	5	3				5					18	1		3			35
Jones	5	2		5	1	2					3			3			21
Keokuk	7	2		6	1	9	1				23			12			61
Kossuth	3	5		3	2	3	1				12			7			36
Lee	4					1					6						11
Linn	8	39		3	1	2			1		30			6		1	91
Louisa	5	3		1		4					11			1			25
Lucas	5			4		5			9		23			6			52
Lyon	1	1				3	1				12						18
Madison	3	2			1	3	1	1			12			6			29
Mahaska	4	1		7	1	19		1			26			3			62
Marion	6	2		1		4					12			8			33
Marshall	7	3		5		3					12		1	4			35
Mills	5	1				1				1	11			7			26
Mitchell	5	2		2	1	2			2		15			3			32
Monona	3			1							13						17
Monroe	6			1		1	1				7			10			26
Montgomery	3					3			1		8			7			22
Muscatine	5	1			1						11		1	3			22
O'Brien	9	1		2	1	2			1	1	17			3			37

NUMBER AND CHARACTER OF CERTIFICATES ISSUED TO MAY 1, 1907—CONTINUED.

Counties	American Trotter	Belgian	Cleveland Bay	Clydesdale	French Coach	French Draft	German Coach	Hackney	Morgan	Oldenbury Coach	Percheron	Saddle Horse	Shetland Pony	Shire	Suffolk	Thoroughbred	Total
Osceola	3	3	----	----	----	----	1	----	----	----	8	----	----	2	---	----	17
Page	5	1	----	----	----	12	----	----	----	----	12	----	----	4	----	1	35
Palo Alto	5	1	----	1	----	1	----	----	----	----	10	----	----	4	----	---	22
Plymouth	----	1	1	1	1	----	1	----	----	1	4	----	----	----	1	1	12
Pocahontas	8	3	----	2	----	6	----	----	----	----	18	----	----	1	----	----	38
Polk	15	6	----	----	----	3	----	----	----	----	22	----	----	9	----	----	55
Pottawattamie	8	4	----	2	1	4	2	----	1	----	19	----	----	4	---	----	45
Poweshiek	3	7	----	6	----	1	----	----	2	----	11	----	1	7	1	----	39
Ringgold	6	1	----	3	----	5	1	----	1	----	19	----	----	5	1	----	42
Sac	6	7	---	6	----	1	----	----	----	----	13	---	----	5	----	---	38
Scott	5	1	----	----	---	1	----	----	----	1	5	----	----	----	----	----	13
Shelby	3	3	----	----	1	2	----	----	1	---	12	----	----	2	----	----	24
Sioux	4	----	----	2	----	1	----	----	----	----	12	----	----	---	----	----	19
Story	1	5	---	2	1	4	----	----	1	----	22	----	----	3	----	----	39
Tama	10	2	----	6	----	3	----	----	----	----	21	----	----	3	--	----	45
Taylor	11	5	----	4	----	7	----	----	----	----	37	----	----	9	---	----	73
Union	6	3	----	1	1	5	----	----	2	----	22	---	----	21	----	----	61
Van Buren	1	2	----	4	1	4	----	----	----	1	17	1	----	3	----	----	34
Wapello	3	1	----	1	----	1	----	----	----	----	9	----	----	1	---	---	16
Warren	6	2	----	----	2	4	----	----	----	----	31	----	----	7	----	----	52
Washington	8	1	----	----	----	7	----	----	----	----	13	1	----	11	----	----	41
Wayne	5	2	----	----	----	5	----	1	----	----	9	----	----	13	----	----	35
Webster	----	3	----	--	----	----	----	--	----	-- -	7	----	----	2	----	---	12
Winnebago	1	1	----	----	----	----	---	----	----	----	12	----	----	---	----	----	14
Winneshiek	2	5	----	1	.	1	1	..	----	----	9	----	----	2	----	----	21
Woodbury	4	1	----	2	----	6	----	----	----	----	12	----	----	2	----	----	27
Worth	----	----	----	----	----	----	----	----	----	----	7	----	----	----	----	----	7
Wright	3	1	----	----	----	2	----	----	----	----	8	----	----	3	----	----	17
Total	458	342	3	191	35	296	31	16	33	13	1362	5	9	410	7	6	----

DIRECTORY OF OWNERS OF PURE BRED STALLIONS BY COUNTIES.

(Certificates Issued to May 1, 1907.)

ADAIR COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
396	John McDermott	Bridgewater	Billy Boy 33799	Percheron
395	John McDermott	Bridgewater	Nonpareil 23034	Percheron
394	John McDermott	Bridgewater	Honest Jerry 6374	Shire
1266	T. M. Neely	Greenfield	Top Sawyer III 7506	Shire
1276	Middle River Horse Co	Greenfield	Jerrierais 31111 (43734)	Percheron
1278	D. A. Dorsey	Greenfield	Vibrant 40702 (488891)	Percheron
1279	C. P. Liegerot	Greenfield	Radio M. 37196	Trotter
1286	A. T. Mason	Greenfield	Top Shot 7718	Shire
1318	A. N. Vandewater	Orient	Ben Faraday 38258	Thoroughbred
1379	E. W. Vandewater	Orient	Orphan Boy 10873	Clydesdale
1380	E. W. Vandewater	Orient	Crasher 9383	Clydesdale
1425	C. C. Havens	Greenfield	Creston Boy 6206	Shire
1528	H. H. Buck	Greenfield	Iowa Lee 40181	Trotter
1532	Fontanelle Coach Horse Co	Fontanelle	Vandyke 1169 (2371)	Cleveland Bay
1533	Fontanelle Percheron Horse Co.	Fontanelle	Royaliste 31749 (45143)	Percheron
1554	F. W. Raasch	Bridgewater	Prince Improver 7839	Shire
1558	C. T. Jackson	Orient	Orient Boy 37691	Trotter
1557	C. T. Jackson	Orient	Bob McGregor 9752	Clydesdale
1603	Frank H. Edwards	Orient	Usurper 7567 (20996)	Shire
1630	J. A. Griswold	Greenfield	Billy Grayson 40899	Trotter
1631	J. A. Griswold	Greenfield	Simmons Star 33030	Trotter
1718	Wm. N. Green	Fontanelle	Botha 7003 (19390)	Shire
1757	F. P. Culverson	Greenfield	Counsellor Jr. 34958	Trotter
2220	C. L. Waltz	Spaulding	Toneham Strexton 8533 (23804)	Shire
2266	W. B. Hoskins	Orient	Pride of the West 7842	Shire
2621	F. P. Culverson	Greenfield	Canus 8683	Thoroughbred
2454	G. H. Sawyer	Greenfield	Black Jack IV 6377 (19343)	Shire
2579	Grove Township Horse Co	Greenfield	Upas 14857 (59588) P	French Draft
2725	C. T. Jackson	Orient	Happy Thought 11761	Clydesdale
2753	John Wynn	Greenfield	Rampton 12709	Clydesdale
67	Wynn Bros	Greenfield	Brampton Harold 6237	Shire
3115	E. J. Oshel	Orient	Joe Swift 37576	Trotter
3158	F. A. Strong	Orient	Wilfrid S. 39403	Trotter

ADAMS COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
562	F. Hoskinson	Corning	Mustapha (53274)	Percheron
480	E. P. Chapman	Prescott	Beaumont 21984	Percheron
493	Holt Township Horse Co	Corning	Conine 9941	French Draft
417	C. M. Bickford	Mount Etna	Duke of Altorf 21071	Percheron
1029	L. H. Humbert & Son	Corning	Voltaire 45320 (56916)	Percheron
1030	L. H. Humbert & Son	Corning	Sully 21770 (49430)	Percheron
1031	L. H. Humbert & Son	Corning	Dolmen 45321 (52814)	Percheron
1032	L. H. Humbert & Son	Corning	Beguin 45322 (56254)	Percheron
1355	J. M. Devore	Corning	Road Bird 22816	Trotter
1543	H. E. Nurdock	Brooks	Lesdiguieres (51818)	Percheron
1537	J. A. Bohanan	Corning	Prince Henry 11258	Clydesdale
178	Wm. F. Hough	Corning	Red Garnet 27132	Trotter
1739	Andrew Nelson	Corning	Lapon 32832 (46018)	Percheron
1892	Laban Harrison	Prescott	Prince Mac Lure 11665	Clydesdale
1891	Laban Harrison	Prescott	Demster H. 12145	Clydesdale
2275	J. H. King	Prescott	Kirk 6576	Shire
2292	L. D. Bishop	Brooks	LaSalle Star 37569	Trotter
2293	L. D. Bishop	Brooks	Waterloo 1869	Percheron
2301	E. Humbert	Corning	Rodil 50622 (51622)	Percheron
2302	E. Humbert	Corning	Pasteur 50660 (65523)	Percheron
2303	E. Humbert	Corning	Verger 50664 (62185)	Percheron
2304	E. Humbert	Corning	Rutilan 50663 (60099)	Percheron
2305	E. Humbert	Corning	Manceau 50657 (58834)	Percheron
2306	E. Humbert	Corning	Primo 50661 (64315)	Percheron
2307	E. Humbert	Corning	Lahire 50655 (51754)	Percheron
2309	E. Humbert	Corning	Lili 50656 (67691)	Percheron
2310	E. Humbert	Corning	Dussautoy 50654 (61128)	Percheron
2311	E. Humbert	Corning	Herons Image 43149	Percheron
2609	Vicker & Blazek	Prescott	Domino 41882 (56570)	Percheron
2323	E. B. Hess	Corning	Good Morning 8822 (21468)	Shire Belgian Draft
2350	J. N. B. Miller	Prescott	Brilliant 1372	Belgian Draft
2351	J. N. B. Miller	Prescott	Plumeau d'Acosse 2041 (31098)	
2352	J. N. B. Miller	Prescott	Franklin 34653	Percheron
2443	E. L. Humbert	Corning	Jerry 29836	Percheron
2738	Hugh Coglan	Corning	Teddy 34721	Percheron
2739	Hugh Coglan	Corning	Frank 43555	Percheron
587	E. P. Chapman	Prescott	Snow Ball 21962	Percheron
2758	James Foy	Prescott	Apollon 26130 (42491)	Percheron
2885	J. N. Ankeny	Prescott	Nailstone Modern Type 7260 (21688)	Shire
2880	J. S. Bowman	Brooks	Comedian 50855 (64758)	Percheron
2879	J. S. Bowman	Brooks	Counter 15347	French Draft
2896	John H. Oshel	Nevinville	Electralto 23579	Trotter
2931	Humbert & Son	Corning	Sully Jr. 48106	Percheron
3060	E. A. Hoskinson	Corning	Carat 50652 (59920)	Percheron
3192	T. O. Swain	Corning	Hal Parker 034	Trotter

ALLAMAKEE COUNTY.

384	W. L. Leas	Rossville	Herbert 29743	Percheron
143	M. T. Jacobson	Waterville	Black Ball 24384	Percheron
142	M. T. Jacobson	Waterville	Alfonso 30940	Percheron
145	Jas. McCormick	Waterville	Bold Harry 5514	Shire
503	Henry Grotegut	Waukon	Prince Henry 6728	Shire
640	Elon Draft Horse Ass'n	Waterville	Gamin De Glabais 1547 (23560)	Belgian Draft
664	Waukon Belgian Horse Co	Lansing	Bismark De Seumoy 1311 (24150)	Belgian Draft
974	John Munz	Church	Lorrain 20557	Percheron
1078	Waukon French Coach Stallion Co	Waukon	Beau-Sire 3644	French Coach
1098	S. J. Svendson	Dorchester	Camille de Bierset 1548 (23056)	Belgian Draft
1207	C. G. Holming & Co	R. No. 1, Waukon	Document 710 (4980)	Belgian Draft

ALLAMAKEE COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1206	C. G. Holming & Co	R. No. 1, Waukon	Gilbert 21037	Percheron
1437	Ludlow Percheron Horse Co.	Waukon	Englisch 1437	Percheron
2680	Jas. Honlihan	Harper's Ferry	Stick 45806 (61875)	Percheron
3039	Henry Grodegut	Waukon	Admiral de Tilly (26770)	Belgian Draft
3205	P. H. O'Neill	Harper's Ferry	Iams Pedro 9870	French Draft

APPANOOSE COUNTY.

121	August Post	Moulton	Wayside Prince 10411	Clydesdale
120	August Post	Moulton	Wayside Douglass 9395	Clydesdale
119	August Post	Moulton	Wayside Regnant 9836	Clydesdale
199	Lincoln Knapp	Centerville	Sisteron 44301 (57869)	Percheron
672	John C. McConnell	Unionville	Keota-Allan 27631	Percheron
858	Eli Smith, Sr.	Unionville	Bury Beauchief II 6155 (17218)	Shire
1412	W. O. Doggett	Numa	Bob Brooks 43309	Trotter
1414	F. P. Hawks	Moravia	Cyprien 28435 (48438)	Percheron
1539	Smith & Clawson	Cincinnati	Brewer's Delight 6133 (19408)	Shire
2125	J. J. Strickler	Centerville	Black Sluggard 28582	Trotter
2126	J. J. Strickler	Centerville	Baron Dillon Jr. 33402	Trotter
2198	Marshall White	Centerville	King Robert 11918	Clydesdale
2223	Udell Horse Co.	Udell	Taupin 26104 (46829)	Percheron
2261	W. H. Johnson	Moravia	Forton de Mons 1985 (25500)	Belgian Draft
2588	Marion McCrory	Moravia	Gagnier 12666	French Draft
2770	Lincoln Knapp	Centerville	Keota Ben 7792	Shire
3003	J. R. Hensley	Mystic	Prince Esher 11907	Thoroughbred
3042	Marion McCrory	Moravia	Centerville Prince 5292	Clydesdale
3088	W. M. Jackson	Centerville	Dunsmore Klondyke 6164 (18706)	Shire
3087	W. M. Jackson	Centerville	Solide II 22672 (43537)	Percheron
3131	Cincinnati Horse Co	Cincinnati	Marronier 32421 (48881)	Percheron
2991	C. E. Mathew and W. H. Howard	Moulton	Haddo of Hillsdale 12550	Clydesdale
3191	J. C. Stevenson	Cincinnati	Marksman 881 (991)	Cleveland Bay

AUDUBON COUNTY.

353	Oakfield Township Horse Co.	Brayton	Monfino 28464 (44967)	Percheron
89	C. R. Wilson	Exira	Greely 12440	French Draft
93	Melville Draft Horse Co	Audubon	Bon Rasselas 6064 (17789)	Shire
66	W. W. Weston	Audubon	Prince Brilliant 9854	Clydesdale
657	Pleasant Valley Horse Co.	Fiscus	Champagne Mecht 1340 (25514)	Belgian Draft
713	M. P. Henricksen	Poplar	Uylisse 1714 (28228)	Belgian Draft
1452	L. N. Esbeck	Exira	Enrage 8107 (844)	French Draft
1490	Powell & Harvey	Exira	Sol Phallis 28606	Trotter
2084	Peter N. Esbeck	Kimballton	Sefton 11640	French Draft
2127	J. C. Hardman	Brayton	Prince 11588	Clydesdale
2129	J. C. Hardman	Brayton	Scotland's Crown 10628	Clydesdale
2390	Richard Fancher	Ross	St. Columba 11427	Clydesdale
2128	C. Ward	Exira	Scotland's Hero 10629	Clydesdale
2497	Amos Fancher	Ross	Rattler 11214	Clydesdale
2498	S. L. Mantz	Audubon	Fernando 45091 (57896)	Percheron
2604	Jacob Layland	Audubon	Prince Albert 15455	French Draft
2850	Jas. L. Johnson	Exira	Jouteur 29567 (45690)	Percheron
2849	Jas. L. Johnson	Exira	Pastel 41404 (60075)	Percheron
2872	F. O. Niklason	Audubon	Early Union 41555	Trotter
2871	F. O. Niklason	Audubon	Kind Standette 41388	Trotter
3014	S. S. Wilson	Audubon	Ambulant 3895	German Coach

BENTON COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
185	W. A. Robison	Urbana	Aesop 27805	Trotter
439	John Scolle	Norway	Alexiev 12490	French Draft
638	Chas. Henning	Keystone	Casimir 24729 (44663)	Percheron
628	Rene Horse Co.	Blairstown	Rene 31138 (46669)	Percheron
761	Wm. Thiessen	Keystone	General 2019 (30118)	Beglian Draft
702	David Spurgeon	Shellsburg	Koubo 1109	French Coach
1074	J. C. Stuart	Newhall	Cramptinnois 1184 (20380)	Belgian Draft
1080	Ellingson & Tow	Norway	Quandum 2007	French Coach
1122	Keystone Belgian Horse Co.	Keystone	Buron 1153 (18164)	Belgian Draft
1172	Jos. Schmuecker	Watkins	Beach Insurgent Vol 24	Shire
1269	I. N. Compton	Belle Plaine	Vidocq 10283	French Draft
1293	John Frese	Norway	Chareaubriand 11281 (20037)	Percheron
1497	Ellingson & Tow	Norway	Hardi (22648)	Belgian Draft
582	Richard Pickart	Norway	Bucephale De Ninove 1618 (24956)	Belgian
1638	Luzerne Belgian Horse Co.	Luzerne	Oran 1399 (21626)	Belgian Draft
1841	I. N. Compton	Belle Plaine	Homestead Dignity 5120	Shire
2263	J. R. Patten	Vinton	Star Counsellor 35936	Trotter
2341	Mt. Auburn Horse Co.	Vinton	Go-Ahead 7354 (Vol.26)	Shire
2389	J. T. Cameron	Vinton	Bolivar 40111 (46462)	Percheron
2479	L. L. Johnson	Vinton	Rameur II 45627	Percheron
2480	L. L. Johnson	Vinton	Bernard J. 45624	Percheron
2481	L. L. Johnson	Vinton	Poppleton 45625	Percheron
2503	Eden Township Horse Co.	Van Horn	Gordon de Lierde (25438)	Belgian Draft
2659	C. A. Burris	Garrison	Joe Briselain 38221	Trotter
2660	C. A. Burris	Garrison	Garrison Reaper 44040	Trotter
2200	Wm. Rabe	Keystone	Cambrinus de Lierde 2589 (34388)	Belgian Draft
2264	George & Ross Johnson	Vinton	Masterpiece 29732	Belgian Draft
2465	W. H. Thiessen	Keystone	Moree II 28856	Percheron
2740	W. J. Mullin	Aredale	Travailleur 22656 (45430)	Percheron
2764	F. L. Thompson	Van Horn	Berenice 46035 (60385)	Percheron
2765	F. L. Thompson	Van Horn	Actif 41695 (64674)	Percheron
2766	F. L. Thompson	Van Horn	Mourzouk 2040 Vol. 12, p. 425)	Belgian Draft
2767	F. L. Thompson	Van Horn	Bazel 39368	Trotter
3063	S. L. Johnson	Garrison	Thabor 41007 (60392)	Percheron
3121	Thos. Sellers	Vinton	Cosaque 41846 (62053)	Percheron
3178	Farmers' Percheron Horse Co.	Vinton	Flambard 41506 (52188)	Percheron
2045	Fry Bros. & Richart	Vinton	Alencon 41424 (61660)	Percheron

BLACK HAWK COUNTY.

173	C. C. Hahn	Raymond	Faquin 22876 (43778)	Percheron
243	F. J. Schweer	Dunkerton	Captif (44891)	Percheron
221	Jas. Loonan	Waterloo	Bloomer 40589	Percheron
220	Jas. Loonan	Waterloo	Superior 40605	Percheron
182	G. W. Clark	Cedar Falls	Petronius 1249	German Coach
286	E. E. Sage	Waterloo	Gartner 113 (1409)	Oldenb'rg Coach
7	K. E. Penney	Cedar Falls	Airoo 31861	Trotter
478	W. D. Strayer	Waterloo	Magor 26953	Percheron
477	W. D. Strayer	Waterloo	Gabels Hopeful 5785 (18029)	Shire
618	C. F. Horse Importing Co.	Cedar Falls	Richard 8th 7574	Clydesdale
617	C. F. Horse Importing Co.	Cedar Falls	Coquet de Herck 1545 (25466)	Belgian Draft
615	C. F. Horse Importing Co.	Cedar Falls	Headlight 5604	Shire
774	C. A. Hayzlett	La Porte City	Tommy Brown 5128	Morgan
1063	W. S. Brecunier	Waterloo	Mascot 2021	Shetland Pony
1038	O. A. Jensen	Dunkerton	Don Pedro 22992	Percheron
1014	Chas. & Ed Walter	Finchford	King Gothard 14218	French Draft

BLACK HAWK COUNTY—Continued,

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1129	Black Hawk Horse Co	Waterloo	Colin 27082 (48564)	Percheron
1155	H. W. Miller	R. 1. Waterloo	Eclipse D'Oplinter	Belgian Draft
1416	C. E. Hearst	Cedar Falls	Gold Crown 10035	Clydesdale
1456	Henry Thompson	Cedar Falls	Keota Charming Gift 11160	Clydesdale
1581	Joseph Harn	Dunkerton	Regulateur 25027 (43441)	Percheron
1789	Jas. Loonan	Waterloo	Gilbert 43543	Percheron
1787	Jas. Loonan	Waterloo	Vanvert 41724	Percheron
1991	Wm. Crownover	Hudson	Flascoe 46220	Percheron
1990	Wm. Crownover	Hudson	Sound Currency 8639	Shire
1989	Wm. Crownover	Hudson	Matchless 8640	Shire
128	A. T. Kline	La Porte City	Toneham Laddie 5393 (17041)	Shire
2556	Wm. Blowers	Waterloo	Lord Finley 42576	Trotter
2557	Wm. Blowers	Waterloo	Velox R. 43574	Trotter
2558	Wm. Blowers	Waterloo	Latier F. 43575	Trotter
2559	Wm. Blowers	Waterloo	Extelle 26839	Trotter
2560	Wm. Blowers	Waterloo	Camden W. 36231	Trotter
2561	Wm. Blowers	Waterloo	Allertonian 36131	Trotter
2900	M. J. Magee	Dunkerton	Marquis De Warelles 2244 (33608)	Belgian Draft
3355	Nils Hansen & Sofus Larson	Hudson	Porcaro 15245	French Draft

BOONE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
190	J. B. Tremain	Boone	The Idol 36086	Trotter
202	W. B. Donelson	Ogden	Herode de Fosteau 1466 (25494)	Belgian Draft
203	W. B. Donelson	Ogden	Boulet Gouy 1465 (25510)	Belgian Draft
237	G. H. Zimbelman	Boone	Allerston 12862	Trotter
368	Geo. D. Muench	Ogden	Iowa Boy 9285	French Draft
433	J. R. Doran	Beaver	Charmante 14544	French Draft
434	J. R. Doran	Beaver	La Fayette 12950	French Draft
677	N. C. Petty	Pilot Mound	Fitch Dandruff Cure Boy 6401	Trotter
678	N. C. Petty	Pilot Mound	Villebon II 40668	Percheron
679	N. C. Petty	Pilot Mound	Bumper 1865	Belgian Draft
811	S. S. Gilbreath	Pilot Mound	Count Shaw 43072	Trotter
812	S. S. Gilbreath	Pilot Mound	Argus Du Fagot 39434	Belgian Draft
1127	A. W. Williams	Pilot Mound	Keota Spurgeon 27696	Percheron
1470	E. D. Bryant	Madrid	Ostendo 1065 (21594)	Belgian Draft
1492	E. D. Bryant	Madrid	Bismark 13298	French Draft
1547	J. E. Smith	Boone	Illustre 10237	French Draft
1602	Geo. F. & Theo. F. Freie	Ogden	Athos II (979)	Belgian Draft
1617	R. H. Reynoldson	Madrid	Britian Yet 10113	Clydesdale
2112	Clinton McCaskey	Ogden	Flamand 1970 (Vol. 12, p. 555)	Belgian Draft
2146	August Peterson	Madrid	Keota Sharp 27686	Percheron
2182	Geo. Freie	Ogden	Shiloh 46858	Percheron
2190	A. W. Williams	Pilot Mound	Dick 16729	Trotter
2225	Henry J. Lark	Ogden	Edelweise 14658	French Draft
2226	H. J. Lark	Ogden	Budweiser 14660	French Draft
2231	Wm. Schall	Berkley	Pierre Le Blanc 43308	Percheron
2402	James Neild	Ogden	Colonel 12585	Clydesdale
2401	James Neild	Ogden	Cardiff 9918	Clydesdale
2627	David Welsh	Boone	Delavan 26769	Percheron
2451	Dotlef Harten	Ogden	Derwent Menestrel 6962 (21334)	Shire
193	Husted Osterhandt	Boone	Sir Consul Jr. 28899	Trotter
2708	Husted Osterhandt	Boone	Major Beath 8350	French Draft
2804	Farmers' Draft Horse Co	Boone	Congo (13468)	Belgian Draft
2866	Geo. W. Colwell	Pilot Mound	Attila 8140 (35812)	French Draft

BREMER COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
158	A. J. Schmit	Minkler	Roosevelt 10343	Clydesdale
159	B. B. Shroes	Janesville	Conquerant 32746 (44954)	Percheron
211	F. C. Kohagen	Waverly	Beau-Rivage (6022)	French Draft
187	J. H. Carstensen	Tripoli	Carliste 581 (4198)	Belgian Draft
188	J. H. Carstensen	Tripoli	Samson 32977	Percheron
735	George Leyh	Sumner	Marshall Lasnes 31059	Percheron
731	J. J. Lynes	Plainfield	Fred Hudson 4541 (5031)	Trotter
730	J. J. Lynes	Plainfield	Dude 4673	Morgan
1073	F. F. Lynes	Waverly	Keota Barnum 20646	Percheron
1390	C. H. Baskin	Waverly	Robert 26944 (46848)	Percheron
1391	C. H. Baskin	Waverly	Pomard 21275 (43229)	Percheron
1389	C. H. Baskin	Waverly	King William 11524	Clydesdale
2139	Eugene White	Plainfield	Charleagno 25888	Percheron
2515	Percheron Horse Co	Waverly	Mirliton 46055 (57209)	Percheron
3217	F. H. Baskins	Janesville	Lord Aberdeen 12970	Clydesdale

BUCHANAN COUNTY.

363	P. H. Fockler	Independence	Fairfield Buster 7833	Shire
362	P. H. Fockler	Independence	Nig 17816	Percheron
361	P. H. Fockler	Independence	Monarch 5684	Shire
360	P. H. Fockler	Independence	Royal 35357	Percheron
381	D. J. Sensor	Hazleton	Avon A. 40917	Trotter
387	Jas. Netcott	Independence	Red Reaper 39280	Trotter
151	W. H. Miller	Independence	Fusain 42837 (56304)	Percheron
264	T. H. Kimball	Quasqueton	Kermet 35393	Trotter
208	W. M. Molyneaux	Independence	King Greenlander	Trotter
483	Peter Schuster	Jessup	Frivole 31448 (48512)	Percheron
1013	Rowley Draft Horse Co.	Rowley	Archer 28748 (45436)	Percheron
1060	B. E. Robinson	R 3, Rowley	Drafty Bill 26372	Percheron
1315	L. B. Young	Independence	King Bow Bells 34231	Trotter
1316	L. B. Young	Independence	Reveur 10718	French Draft
1592	E. W. Chessmore & M. P. Kepford	Independence	Victor 11222	French Draft
1768	Fred Retz	Lamont	Ocean 21272 (42903)	Percheron
1820	Geo. B. Winegar	Brandon	Donnell 46107	Percheron
1976	C. H. Jakway	Aurora	Newton J. 41382	Trotter
2228	Aurora Percheron Horse Co	Aurora	Lepanto 41657 (47428)	Percheron
616	J. J. McBride	Winthrop	Lion de Loncin 1542 (25464)	French Draft
3004	A. J. Drake	Hazleton	Darling 41620	Percheron
3020	Winthrop Horse Co	Winthrop	Marengo 24467 (44400)	Percheron

BUENA VISTA COUNTY.

1	C. E. Cameron	Alta	Look Sir 31562	Trotter
4	J. E. Rudolph	Marathon	Zalfo 34092	Trotter
24	Jas. M. Hoskins	Sioux Rapids	Ole Oleson 35603	Trotter
25	Jas. M. Hoskins	Sioux Rapids	Billy Lee 43177	Trotter
219	Holmes & Kennedy	Alta	Soprano 40393 (45063)	Percheron
201	Bradford & Seeth	Rembrandt	Brutus 21457 (43203)	Percheron
642	J. A. Chindlund	R. No. 3, Alta	Sabinus 13093 (25670)	Percheron
951	Elk Percheron Horse Co	Alta	Parmentier 32401 (45668)	Percheron
1083	J. M. Haywood	Alta	Satan 1813 (25282)	Belgian Draft
1010	Linn Grove Horse Co	Linn Grove	Moblot 29499	Percheron
894	David Snyder	Sioux Rapids	Ambassador 5034	Shire
1219	Storm Lake Percheron Horse Co	Storm Lake	Muscle 34299 (46359)	Percheron

BUENA VISTA COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1252	M. Mulvihill, Sr	Newell	Dewette 1252	Percheron
1251	N. M. Layman	Newell	French Monarch 9353	French Draft
1232	N. M. Layman	Newell	Allside Prince 5621	Shire
1759	Carl P. Hoeg	Newell	Diamond 43300	Percheron
1092	J. T. Norton	Marathon	Zaffre 37099	Trotter
2037	Wm. Woods	Newell	Duke X II 5934 (18680)	Percheron
2163	E. E. Holmes	Marathon	Pompon Jr. 45197	Percheron
2763	Len H. Lamar	Storm Lake	3rd Jeweled Prince 10881	Clydesdale
2542	Marathon Shire Horse Co	Marathon	Gabels Coeur-de-Lion 6961 (Vol. 25)	Shire
2715	Geo. Kestell	Storm Lake	Munger 23794	Percheron
2784	Hayes Shire Horse Co	Storm Lake	Highland Hero 4940	Shire
2923	Buena Vista Center Percheron Horse Co	Storm Lake	Baptiste 28163 (47052)	Percheron
3	B. Faltz	Storm Lake	McCaskle 6820	Clydesdale

BUTLER COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
247	T. J. Watterson	Aredale	Bourdon 7314 (1458)	French Draft
235	Colin Horse Co	Austinville	Colin 29946 (48454)	Percheron
548	W. J. Feltus	Allison	Prince Perche 20951	Percheron
355	H. C. Miller	Bristow	Major McKinley 826	Belgian Draft
1084	R. W. Webster	Allison	Brown King 26359	Percheron
1072	F. W. Bucholz	Clarksville	Keota Henry 31900	Percheron
1054	Miller & Rogers	Allison	Alcibiade 15877 (22819)	Percheron
1185	Burt Curtis	Allison	Keota Rambler 27652	Percheron
1359	J. Nevins	Greene	Dude Jr. 4348	Trotter
1827	H. F. Stanton	Greene	Drum Major 25880	Percheron
2332	Chas. & Wm. Tell	Clarksville	Pierre de Pieton 1988 (29746)	Belgian Draft
2413	John Metcalf	Allison	Pompedour 900	Belgian Draft
659	Wedeking Bros. & Co	Clarksville	Dewey 24585	Percheron
918	M. H. Barnes	Dumont	Guidon (34246)	Belgian Draft
2042	Beaver Grove Horse Co	New Hartford	Grandee 23212	Percheron
2841	Martin & Burroughs	Clarksville	Romeo II 12551	Clydesdale
3244	M. H. Barnes	Dumont	Sherwin 20975	Trotter

CALHOUN COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
98	J. M. Baker	Jolley	Moustache 24572 (43576)	Percheron
160	Rockwell City Horse Co	Rockwell City	Monaco 26908	Percheron
261	J. B. Richards	Rockwell City	Baron Lee 36549	Trotter
55	J. M. Furney	Manson	Watchword Junior 35665	Trotter
54	Gingerich & Petrie	Manson	Butor (46127)	Percheron
37	J. M. Baker	Jolley	Rutland Prince 6223	Shire
85	Yetter Belgian Horse Co	Yetter	Charles Quint 18192	Belgian
411	J. W. Lockie	Pomeroy	Allerco 35459	Trotter
915	W. H. Kent	Manson	Brown Ben 6249	Shire
1021	John Baughmen	Manson	St. Laurent 13509	French Draft
1022	Elsen Bros	Manson	Mouvement 25593 (44687)	Percheron
1023	Weise & Co	Manson	Mouton D'Heure 1096 (21096)	Belgian Draft
963	A. A. Wells	Somers	Colonel Berry 33720	Trotter
962	A. A. Wells	Somers	Tic Tac 28141 (44773)	Percheron
1175	J. H. Van Meter	Manson	Ponca Van 39834	Trotter
1176	J. H. Lish	Manson	Dr. Dunkle 40620	Trotter
1179	L. E. Pierce	Rockwell City	Marmotte 26142 (44048)	Percheron
1212	W. Q. Stewart	Rockwell City	Rockwell Boy 41851	Trotter
1236	T. M. Wilkinson	Lohrville	Monaboul Brownell 35309	Trotter

CALHOUN COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1436	A. F. Ramthun	Rockwell City	Dogue 43910 (60856)	Percheron
1511	E. S. Carmean	Lake City	Surprise 25300	Percheron
1648	Pomeroy Horse Co	Pomeroy	Citadin (48476)	Percheron
1649	John Doyle	Pomeroy	Custine 6587 (9970)	Percheron
1753	O. H. Snyder	Manson	Black Reaper 43314	Percheron
1754	O. H. Snyder	Manson	Victor 24068 (44560)	Percheron
1779	Knierim Belgian Horse Co	Knierim	Daniel 1182 (17830)	Belgian Draft
2124	A. M. Pierce	Rockwell City	Dauphin 2346 (30648)	Belgian Draft
2385	J. H. Hildreth	Rockwell City	Bedwell Tom 8435 (22162)	Shire
2511	J. W. Brayton	Rockwell City	Lake City Matchless 7288	Shire
2517	Lake City Percheron Horse Co	Lake City	Emery 33740 (46207)	Percheron
2539	F. W. Arney	Lake City	Prince Model 44268	Percheron
2540	F. W. Arney	Lake City	Tom Tom 44269	Percheron
2541	F. W. Arney	Lake City	Scarabe's Model 43701	Percheron
2542	F. W. Arney	Lake City	Togo 44270	Percheron
2855	Hutchinson & Jacobs Lake City Horse Co	Lake City	Tacticien 2481	French Coach
2887	J. E. Barr & Wm. Winkleman	Lohrville	Pepin De Leernes 1756 (21650)	Belgian Draft
2906	W. D. Pittman	Lake City	Mahomet Royalist 4861	Shire
2905	W. D. Pittman	Lake City	Eden Chief 8712 (19580)	Shire
2904	W. D. Pittman	Lake City	Mahomet Boaz 4938	Shire
1020	Nordhausen & Schmidt	Manson	Waterloo 12661	French Draft
3229	George Moss & Cain & Son	Lohrville	Llynelys Lad 7098 (17450)	Shire
3299	C. W. Titus & Son	Yetter	Pink Major 43927	Percheron

CARROLL COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
32	J. Coder	Glidden	Red Wallace 22369	Trotter
29	Henry Torpy	Manning	Brilliant 1849	Belgian Draft
810	Jos. Wilson	Manning	Bolibar 19335	Percheron
1245	Wm. Henton	Glidden	Tobe II 746	French Draft
1246	Wm. Henton	Glidden	Docelle 1246	Percheron
1562	Julian Township Horse Co	Coon Rapids	Hercule De Courtrai 1439 (25364)	Belgian Draft
1639	Wm. Rupiper	Carroll	Malborough 839 (13010)	Belgian Draft
1690	Henry George	Coon Rapids	What You Want Jr. 29165	Percheron
1695	L. W. Schumacher	Carroll	La Fleur 10900	French Draft
65	Wm. Wiese	Manning	Diemede 18548	Percheron
2171	W. E. Hodge	Carroll	Porus 11943 (5979)	French Draft
2227	Herman F. Von Glan	Breda	Grison (28932)	Belgian Draft
2661	A. Kessler	Carroll	Moltka 39075	Trotter
2384	Hy Dammann	Manning	Coriza 41830 (56193)	Percheron
2446	A. E Bolton	Glidden	Regent II 10843	French Draft
2543	H. E. Brown	Coon Rapids	Bertrand 12582	Percheron
2741	Lefingwell Horse Co	Glidden	Cedar 27393 (45840)	Percheron
2798	R. S. Keat	Manning	Faro de Rotheaux 2428 (Vol. 12, p. 484)	Belgian Draft
2799	D. P. Copp	Carroll	Carnot (13561)	Percheron
2809	Phillip Schleisman	Carroll	Croquemitaine (52402)	Percheron
1466	Mike Fritz	Arcadia	Grandini 21988 (42783)	Percheron
2839	T. M. Campbell	Coon Rapids	Nobility 231	Suffolk
2877	J. H. Kohorst	Arcadia	Riposteur 27422 (44782)	Percheron
2903	Manning Norman Horse Co	Manning	Conqueror 9107	French Draft

CASS COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
520	A. P. Cuykendall	Atlantic	Westside Referee 250	Suffolk
348	Chas. Denne	Atlantic	Ciceron 31105 (46917)	Percheron
224	Caledonia Shire Horse Co.	Griswold	Stuntney Zephyr 8366 (22841)	Shire
179	A. P. Cuykendall	Atlantic	West Side Sultan 230	Suffolk
241	J. H. Schofield & Oliver Manison	Griswold	Colosse 12458	French Draft
272	J. P. Brunner	Griswold	Rex 1591 (1618)	German Coach
284	Alex Dallas	Atlantic	Peter Kane 36969	Trotter
583	R. A. Berry	Atlantic	Knottinglet Referee (22501)	Shire
651	Turner Bros	Griswold	Prince B. 10731	Clydesdale
650	Turner Bros	Griswold	Major P. 11233	Clydesdale
608	Perry Woods	Marne	Green Mountain Boy	Morgan
607	Perry Woods	Marne	Banqueter 38881	Trotter
412	Anita Horse Co.	Anita	Merrimac 11952	Clydesdale
765	J. A. Nelson	Atlantic	Lusnonnais 43874 (53255)	Percheron
738	Geo. G. Lindeman	Lewis	Black Prince 21415	Percheron
739	Geo. C. Lindeman	Lewis	Banker Boy 21153	Percheron
831	Ray McClintock	Griswold	Archie Greenlander 38704	Trotter
1042	J. P. Chandler	Cumberland	Bedwell Marquis 8326 (22101)	Shire
1062	E. D. Ruff	Atlantic	Pat King 35906	Trotter
878	Fred Lassen	Atlantic	Captaine (51649)	Percheron
1156	G. E. McDermott	Anita	Napoleon Boy 45204	Percheron
1181	I. D. Murray	Anita	Moulton Sir Peter (22957)	Shire
1215	J. F. Gissibl	Anita	Defender's Best 11646	Clydesdale
1214	Alfred Bailey	Anita	The Master of Stair 11607	Clydesdale
1213	Alfred Bailey	Anita	Laird of Anita 12157	Clydesdale
1229	Wm. Hopley	Atlantic	Orlando (20785)	Shire
1274	J. C. Kennedy	Atlantic	Greviste 30617 (43717)	Percheron
1396	Peter Biggs	Anita	Plough Boy II 5135	Shire
1423	Watt Devore	Massena	Luzignan 21778 (43899)	Percheron
1538	W. B. Berry	Atlantic	Stuntney Blake II 6652 (20061)	Shire
1597	F. H. & M. O. Trailer	Marne	Northolme Gipsey King 8197 (22639)	Shire
1781	M. L. Northrup	Lewis	Joe Bailey 8003	Shire
2101	Caledonia Belgian Horse Co	Griswold	Tudor II 2572 (29482)	Belgian Draft
78	S. L. Harrison	Marne	Conway Brilliant 904	Belgian Draft
2298	Geo. Smith	Atlantic	Beecher 14292	French Draft
2444	E. F. Moon	Atlantic	Young Hylas 43703	Trotter
2449	Frank Ruchs	Massena	Julius 2529 (33670)	Belgian Draft
2582	H. C. Wohlenhaus	Griswold	Bouvois 41876	Percheron
2697	Otto Lassen	Cumberland	Piston 2414 (27398)	Belgian Draft
2698	Otto Lassen	Cumberland	Roy 7859	Shire
2718	Cheney & Bell	Massena	Montekuma 34968	Trotter
2719	Cheney & Bell	Massena	Royston Prince 11635	French Draft
2720	Cheney & Bell	Massena	Herault 14972	French Draft
2721	Cheney & Bell	Massena	Orlando 42842	Percheron
2771	V. B. Mayberry	Atlantic	Leloir 41835 (54790)	Percheron
2781	Wm. Toepfer	Atlantic	Patriote 27823 (44454)	Percheron
697	Colwell & Brown	Atlantic	Bishop Jr. 38199	Trotter
1149	James Duncan	Atlantic	Duke of Creston 10949	French Draft
2984	Gene Pierce	Cumberland	Oriola 1567	German Coach
3109	Peter Hopley & Son	Lewis	Janus 3899	German Coach
3106	A. R. Brown	Anita	Baba 41824 (60746)	Percheron
3224	Wilson Bros	Anita	Prince Kirtlebridge 9221	Clydesdale
3246	Fred Steinke	Atlantic	Prince L. 2606	Shetland Pony

CEDAR COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
390	Wm. Gray	Mechanicsville	Sandscale Mafeking 7111 (19100)	Shire
391	Wm. Gray	Mechanicsville	I. D. 33221	Trotter
218	Downey Draft Horse Co	Downey	Negrillon 26105 (54340)	Percheron
223	F. M. Emerson	Clarence	King Richard 5975	Shire
515	A. J. Sawyer	West Branch	Maple Dick 12917	French Draft
553	F. W. Eilers	Tipton	Jim Corbet Jr. 7387	Shire
773	C. B. Baughman	Mechanicsville	Wyomie 29674	Trotter
720	J. J. Jackson	Mechanicsville	Howard Black 38488	Trotter
857	Jno. Willer, Jr.	Tipton	Tipton Major 5454	Shire
852	Sam McAfee	Mechanicsville	Delamere Combination 7357 (1672)	Shire
870	C. E. Kohl	Mechanicsville	Horbling Field Marshal 7112 (18814)	Shire
1162	Glen Linden Shire Horse Co	Stanwood	Blaisdon Vulcan 7113 (18529)	Shire
1217	B. Kook	Durant	Pleasant Hill King 2380	Percheron
1218	B. Kook	Durant	Albert 32259 (48457)	Percheron
1233	Rustique Horse Co	Stanwood	Rustique 27152 (48366)	Percheron
1491	Leander Horse Co	West Branch	Leander 12459	French Draft
1478	Chas. Mason	Tipton	Cephas 10771	Trotter
2166	A. J. Glick	Clarence	Glick's Plunger 41589	Percheron
2179	O. R. Glick	Clarence	Auctioneer 30234	Percheron
2975	C. L. & C. D. Peck	Mechanicsville	Winton Duke 2975	Shire
3136	F. M. Gray	West Branch	Old Tar 15701	French Draft
3135	F. M. Gray	West Branch	Billy J. Bryan 15702	French Draft
3134	F. M. Gray	West Branch	Teddy 15703	French Draft
3133	F. M. Gray	West Branch	George Arthur 15704	French Draft

CERRO GORDO COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
578	C. H. Merchant	Mason City	Sir George 2736	Shire
579	C. H. Merchant	Mason City	Victor M. 8386	Shire
580	C. H. Merchant	Mason City	Maxmillion 7744	Shire
600	Neils Brown	Thornton	Caesar 27831 (48382)	Percheron
1580	A. M. Avery	Mason City	Abe Lincoln 8400	Shire
1627	P. Murphy	Dougherty	Beauregard 49407	Percheron
1646	James Ferrier	Mason City	Pipestone Bill 41406	Percheron
1679	Wetter, Latimer, Crotty Horse Co	Rockwell	Bolero 40391 (56734)	Percheron
1756	C. Bryant	Mason City	Connaught 2779	Shire
2286	L. G. Parker	Mason City	Rex 50294	Percheron
2287	L. G. Parker	Mason City	Rouser 35826	Percheron
2313	Robt. Carr	Mason City	Robert Patch 41405	Trotter
2314	Robt. Carr	Mason City	Barondean 36317	Trotter
2415	L. G. Parker	Mason City	Peer 40418	Percheron
2830	Rockwell Horse Co	Rockwell	Clos Vougeot 2203 (33310)	Belgian Draft
1235	T. B. Morse	Rock Falls	Keota Narragansett (31881)	Percheron
3004	Paul Bros	Thornton	Calleo 42180	Trotter
3003	August Hanson & Paul Bros	Thornton	Renouveau 1063 (21582)	Belgian Draft
3337	C. M. Baker	Mason City	Frank 9523	French Draft
3335	Van Note Bros	Mason City	Armour 42035	Percheron

CHEROKEE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
157	J. J. Richardson	Marcus	Bloc 24705	Percheron
1819	F. W. & C. E. Peck	Cherokee	Sultan 44330 (56244)	Percheron
2143	F. F. Lowell	Larrabee	Baccarat 20398	Percheron

CHEROKEE COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2168	Maple Valley Belgian Horse Co	Aurelia	Marquis de Wytschacte 482 (25416)	Belgian Draft
2191	C. P. Spinharney	Cherokee	Moquart 1352 (16790)	Belgian Draft
2192	C. P. Spinharney	Cherokee	Polo 44135 (51875)	Percheron
2194	John Soukup	Marcus	Cadet de Mouchon 1753 (23852)	Belgian Draft
2197	W. J. Dawson	Washta	Pichegru 13035 (51163) P.	French Draft
2404	W. P. Green	Washta	Farmers Profit 27915	Percheron
2551	G. W. Harrison	Washta	Walpole 24554	Trotter
2552	G. W. Harrison	Washta	Mongout 27375 (44592)	Percheron
2783	T. E. Linton	Aurelia	Branchwood 24164	Trotter
2796	L. H. Ducommun	Cleghorn	Brilliant List 47328	Percheron
2883	R. Larkin	Cherokee	Knute 11864	Percheron
2963	J. A. Kelly	Larrabee	Malmaison 41864	Percheron
3005	Geo. Hirschman	Marcus	Saphir 32834 (46498)	Percheron
3006	Fred Furkly	Marcus	Corbon 33056	Percheron
3007	E. V. Ferrin	Marcus	Gold Bug 21127	Percheron
3105	Cleghorn Horse Co	Cleghorn	Cambodge 29492 (44914)	Percheron
3114	W. P. Green	Washta	Chalet 40672 (55519)	Percheron

CHICKASAW COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
487	F. P. Shekleton	Lawler	Matchless McKinley 11798	Clydesdale
486	F. P. Shekleton	Lawler	John Lawler 11797	Clydesdale
485	F. P. Shekleton	Lawler	Newton Masher 7654	Shire
484	F. P. Shekleton	Lawler	Rockwell 19843	Percheron
576	W. S. Thorn	Fredericksburg	Faor 33136	Percheron
575	W. S. Thorn	Fredericksburg	Sultani 45122 (56900)	Percheron
94	Gilbert Touney	Lawler	Roy Benton 8368	Shire
93	Ivy Sturn	Nashua	Sturmidor 29696	Percheron
108	W. B. Porter	New Hampton	Boyer 10522	Trotter
283	North Washington Horse Co	No. Washington	Tiflis 23227 (41397)	Percheron
2	L. C. Goodsell	Nashua	Sesostris 27871 (43661)	Percheron
425	Bassett Percheron Horse Co	New Hampton	Rejoni 45011	Percheron
629	X. F. Mishak	Ionia	Farmer 10119	Clydesdale
757	P. M. Smith	Ionia	King 12856	Percheron
719	Smith Bros	Fredericksburg	Sherman 22339	Percheron
914	J. F. Cagley	Nashua	Billy M. 5113	Morgan
1089	Dan Hickok	Ionia	Ralock 43241	Trotter
1088	M. B. Farr	Nashua	Obus 27803 (42548)	Percheron
1046	Alex Shekleton	Lawler	Cedric MacNeil 10049	Clydesdale
1257	New Hampton Belgian Horse Co	New Hampton	Beduoin 1256 (23802)	Belgian Draft
1224	Mike Whalen	Jerico	Lapin (58301)	Percheron
1225	Mike Whalen	Jerico	Bangala 856 (11890)	Belgian Draft
1275	Henry Brockhorst	New Hampton	Ray Westfall 9631	Clydesdale
1311	Miller & Kenyon	New Hampton	Star Abbott 16679	Trotter
1378	C. F. McNevins	Lawler	Bob McNevins 34289	Trotter
1399	S. A. Shekleton	Lawler	Sable Prince 11300	Clydesdale
1400	S. A. Shekleton	Lawler	Prince Telectable 11831	Clydesdale
1378	C. F. McNevin	Lawler	Bob McNevins 34289	Trotter
2219	Otto Koerth	Ionia	Russell Ago 44463	Trotter
1498	F. P. Shekleton	Lawler	Wm. McKinley 12372	Clydesdale
1499	F. P. Shekleton	Lawler	Black Major II 45437	Percheron
1734	X. F. Mishak	Ionia	Francois II 40111	Percheron
1750	Frank Leightman	New Hampton	Gamzoo 34363	Trotter
1837	James Ramsey	Lawler	Silver Royal 43539	Trotter
2237	F. P. Shekleton	Lawler	Robin Rant 14645	French Draft
2236	F. P. Shekleton	Lawler	De Soto 47227	Percheron
2235	X. F. Mishak	Ionia	Fleuris 14845 (61659) P.	French Draft
2782	J. T. Huffman	Ionia	Nedrow 41809	Percheron
2812	H. C. Christensen	Nashua	Monarch 25428	Percheron
2838	Jno. Clemens & Co	New Hampton	Ray Westfall 9651	Clydesdale

CHICKASAW COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2902	Thos. H. Smith	Lawler	Mac Niven 8655	Clydesdale
3129	S. E. Johnson	New Hampton	Clapet 11050	Percheron
3143	F. P. Shekleton	Lawler	Prince Discoverer 9746	Clydesdale
3142	F. P. Shekleton	Lawler	Crouse 47105	Percheron
3141	F. P. Shekleton	Lawler	Quarius 43267	Percheron
3190	L. B. Scales	Nashua	Donshaw 35979	Trotter
3194	R. W. Donovan	Lawler	Billy Bryan 13135	Clydesdale

CLARKE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
156	J. A. & A. A. Carson	Woodburn	Bardolph 13566	French Draft
234	Hart Bros	Osceola	Hampfield Samson 7153	Shire
235	Hart Bros	Osceola	Ranger 6470	Shire
213	A. H. Griffin	Osceola	Martello 17988 (37247)	Percheron
459	Murray Percheron Horse Co	Murray	Makir 28441 (46877)	Percheron
38	Charles Swick	Osceola	Hoverton Iron Duke 13366	French Draft
440	Thos. Johnson	Murray	Doctor D. 41505	Trotter
439	Thos. Johnson	Murray	Colonel Duroc 37967	Trotter
670	W. G. Hindes	Murray	Becket May Prince 6857 (17149)	Shire
669	W. G. Hindes	Murray	The Spartan 34175	Trotter
682	Hart Bros	Osceola	Vincennes 50195 (59558)	Percheron
681	Hart Bros	Osceola	Ducal 50194 (60035)	Percheron
413	Milton L. Evans	Murray	Cenright 6966	Clydesdale
1071	Lewis Bros	Osceola	The Black Prince 9345	Clydesdale
1096	G. C. Lucas	Hopeville	Walter J. 29225	Trotter
1135	G. P. Rhodes	Woodburn	Caro (Vol. 7)	Oldenburg Coach
1329	Hart Bros	Osceola	Sebastopol 50220 (56286)	Percheron
1684	David Mitchell	Murray	Teddy Roosevelt 1067	Belgian
1685	David Mitchell	Murray	Duke 5002	Shire
1800	Hart Bros	Osceola	Ducal 50311	Percheron
1816	Hart Bros	Osceola	Abbot 50387	Percheron
1815	Hart Bros	Osceola	Joe-Banker 50386	Percheron
1829	Hart Bros	Osceola	Joseph the Banker 8647	Shire
1862	Hart Bros	Osceola	Roublard 50436 (62775)	Percheron
1844	Hart Bros	Osceola	Joe Bailey 50886	Percheron
1845	Hart Bros	Osceola	Spark 50289	Percheron
1846	Hart Bros	Osceola	Du-Rock 50312	Percheron
1847	Hart Bros	Osceola	Victor Gilbert 50621	Percheron
1848	Hart Bros	Osceola	Ralph 50253	Percheron
1849	Hart Bros	Osceola	Jerry Johnson 50252	Percheron
1850	Hart Bros	Osceola	Hempfield Samson 50250	Percheron
1851	Hart Bros	Osceola	Ducal 50674	Percheron
1852	Hart Bros	Osceola	Rataplan 50620 (60462)	Percheron
1853	Hart Bros	Osceola	Mulot 50834 (53778)	Percheron
1854	Hart Bros	Osceola	Cattu 50424 (51560)	Percheron
1855	Hart Bros	Osceola	Granit 50427 (64873)	Percheron
1857	Hart Bros	Osceola	Panquert 50435 (55255)	Percheron
1858	Hart Bros	Osceola	Souaze 50437 (64787)	Percheron
1859	Hart Bros	Osceola	Maubert 50431 (57853)	Percheron
1860	Hart Bros	Osceola	Mosnil 50432 (55589)	Percheron
1861	Hart Bros	Osceola	Mastique 50430 (64774)	Percheron
2001	Hart Bros	Osceola	Slather 8396	Shire
2002	Hart Bros	Osceola	Osceola Sampson 8695	Shire
2003	Hart Bros	Osceola	Champion 50287	Percheron
2004	Hart Bros	Osceola	Spring-Up 50703	Percheron
2005	Hart Bros	Osceola	Senitor 50702	Percheron
2031	Hart Bros	Osceola	Tableau de Aspe 2378 (29916)	Belgian
2032	Hart Bros	Osceola	Slasher 50288	Percheron
2033	Hart Bros	Osceola	Victor-Gilbert 50730	Percheron
2034	Hart Bros	Osceola	Ferry Oak 8441 (23918)	Shire
2085	Hart Bros	Osceola	Osceola Banker 50746	Percheron
2086	Hart Bros	Osceola	Osceola Boy 50747	Percheron
2103	S. S. Critchfield	Woodburn	Balandard 22664 (42798)	Percheron
2121	Hart Bros	Osceola	Jerry Johnson 12218	French Draft
680	Robinson & Griffin	Osceola	Aloes 50217 (55899)	Percheron
1057	David Mitchell	Murray	Jim Jam 32838	Percheron
2214	Hart Bros	Osceola	Lucky Lad of Town's End 898 (9329)	Hackney

CLARKE COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2216	Hart Bros	Osceola	Royal II 7085	Shire
2215	Hart Bros	Osceola	Ralph 50819	Percheron
2248	Hines Bros	Murray	Osceola Rampton 8852	Shire
2250	Hart Bros	Osceola	Happy Boy 50842	Percheron
2277	Hart Bros	Osceola	Durock 50203	Percheron
2291	Wm. Ritchie, Ed Husted & J. B. Hazlett	Murray	Feramorz 12594	French Draft
2368	Hart Bros	Osceola	Stuntney George 8860 (24653)	Shire
2369	Hart Bros	Osceola	Stuntney Shem 8861 (22835)	Shire
2370	Hart Bros	Osceola	Mistral 50890 (62275)	Percheron
2371	Hart Bros	Osceola	Beatrix 50882 (62373)	Percheron
2373	Hart Bros	Osceola	Dartagnon 50866 (60097)	Percheron
2374	Hart Bros	Osceola	Xavier 50895 (61895	Percheron
2375	Hart Bros	Osceola	Biffin 50884 (53737)	Percheron
2376	Hart Bros	Osceola	Raab 50893 (58383)	Percheron
2377	Hart Bros	Osceola	Turenne 50897 (58865)	Percheron
2378	Hart Bros	Osceola	Python 50892 (60409)	Percheron
2379	Hart Bros	Osceola	Affuteur 50881 (64666)	Percheron
2380	Hart Bros	Osceola	Benjamin 50883 (54566)	Percheron
2381	Hart Bros	Osceola	Damier 50885 (64212)	Percheron
2382	Hart Bros	Osceola	Domino 50887 (64195)	Percheron
2383	Hart Bros	Osceola	Horoff 50889 (60458)	Percheron
2384	D. B. Hedge	Osceola	Mogol 50891 (62665)	Percheron
2622	E. C. Staley	Osceola	Loyalty 11978	French Draft
2702	C. B. Shinn	Osceola	Conway Prince 978	Belgian
2811	Clark Co. Horse Co	Osceola	Courgeon 24268 (44031)	Percheron
3059	J. E. Perry	Osceola	Zulman 12368 (5957B)	French Draft
3149	Hart Bros	Osceola	Banker 50980	Percheron
3148	Hart Bros	Osceola	Banker Joseph 9021	Shire
3147	Hart Bros	Osceola	Harts Thumper 9020	Shire

CLAY COUNTY.

424	Clausen & Jones	Peterson	Stockwell IV 6858 (20055)	Shire
508	A. A. Reynolds	Spencer	Jonas 41868 (55201)	Percheron
1002	F. J. Clarke	Fostoria	Silver Moak 40733	Trotter
1115	Fostoria Horse Breeding Ass'n	Fostoria	Kruger 29902 (48266)	Percheron
1460	C. I. Ginger	Langdon	Sam H. 35880	Percheron
1561	Spencer Draft Horse Co	Spencer	Monaco 1185 (19354)	Belgian
1659	Harmony, Greenville & Douglas Horse Co	Greenville	Romarin 27435 (43618)	Percheron
2028	Alonzo Jones	Peterson	Jumbo G. 8314	Shire
2230	J. W. & Frank McDowell	Greenville	Bolsinger 33323	Trotter
2353	Royal Horse Co	Peterson	Pepin 29490 (45751)	Percheron
2518	Frank McDowell	Spencer	Favorette 40658	Percheron
2519	Frank McDowell	Spencer	Nogentais 23198 (43781)	Percheron
2594	Frank McDowell	Spencer	Kenmor 23023	Percheron
1272	Stouffer, Peterson & Erfmeyer	Fostoria	Urson 2837	French Coach
2980	I. N. Reed	Webb	Audley Boy 7154 (Vol. 25)	Shire
2990	Spencer Draft Horse Co	Spencer	Armagh 2523 (Vol. 13, p. 543)	Belgian
3050	E. U. Roberts	Dickens	Tricolet 50650 (60116)	Percheron
3171	J. H. Everett	Dickens	Improver 4017	Clydesdale

CLAYTON COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
146	Koontz Bros	Monona	Buzot de Picton (29360)	Belgian
522	J. L. Schneider	Elkader	Triton 42875 (44805)	Percheron
523	J. L. Schneider	Elkader	Clarion De Bel Air 1721 (29522)	Belgian
497	Joseph Cain	Elkader	Iron Duke 29304	Percheron
648	Pettit & Koontz	Monona	Royal Emblem 43208	Trotter
668	Smith & Kahlbaum	Elkader	David De Volle 1347 (24318)	Belgian
958	Kaiser Bros	St. Olaf	Torpilleur 42832 (59926)	Percheron
1383	Wm. Koth & Co.	Farmersburg	Larbin 42881 (54647)	Percheron
1458	A. A. Kishman & A. Henkes	Farmersburg	Le-Fertois 26296 (18836)	Percheron
1628	Mederville Draft Horse Ass'n	Mederville	Bury Colonel 6168 (17220)	Shire
1689	August Duwe	Guttenberg	Trojan 31389	Percheron
1832	G. E. Bachtell.	Volga	Star Onward 31514	Trotter
2241	Jas. Crain	Volga	Mercure 25721 (43490)	Percheron
2242	Jas. Crain	Volga	Laddie 45427	Percheron
2397	Geo. Voshell	Volga	Jabot 41034 (53708)	Percheron
2544	Garnavillo Shire Horse Co	Garnavillo	Magnum Bonum IV 7928 (18901)	Shire
2837	Mrs. E. E. Meyers	Elkader	Chabrol 26076 (44799)	Percheron
2926	Hurley & Meyer	Volga	Elvenden First Lord 8583 (23919)	Shire

CLINTON COUNTY.

527	A. W. Johnson.	De Witt	Valespir 11318	French Draft
525	A. W. Johnson.	De Witt	Bordelon 38677	Trotter
526	A. W. Johnson	De Witt	Border Wilkes 29022	Trotter
528	A. W. Johnson	De Witt	Margot 27846 (47048)	Percheron
513	J. E. Shannon	De Witt	Sebastian 13886	French Draft
529	A. W. Johnson	De Witt	Enfield Stylish Chief 7935 (21404)	Shire
730	Center Grove Horse Co	Charlotte	Frank 9926	French Draft
1049	George Corbin	Calamus	Sceptique 44308 (60627)	Percheron
1050	George Corbin	Calamus	Babeuf 44307 (51767)	Percheron
1051	George Corbin	Calamus	Simon De Rosoux 1839 (25366)	Belgian
994	Peter Frett	Brown	Africander (45089)	Percheron
1372	Chris Lund	Elwood	Apollon (19098)	Belgian
1544	Grand Mound Horse Co	Grand Mound	Pedro 28621	Percheron
1556	O. C. Henyon	Clinton	C. H. 33188	Trotter
1985	Wm. Burk	Charlotte	Brulot 41504 (59670)	Percheron
2438	Wm. Tinnefeldt.	Lost Nation	Colson (62987)	Percheron
2714	Hicks Bros	Elwood	Lion de Buzet (30272)	Belgian
1041	A. W. Johnson.	De Witt	Dewey Boy 39220	Trotter
2822	Brindisi Percheron Horse Co.	Bryant	Brindisi 22723 (43414)	Percheron
2821	Eugen Hanssen	Bryant	Stanlaws 4759	Shetland Pony
3082	J. O. Ott	Baldwin	Glendale Major 42438	Percheron
3156	Wm. F. Heinke.	Delmar	Vergoin 35101 (45656)	Percheron

CRAWFORD COUNTY.

200	L. P. Rose	Charter Oak	General 186	Oldenburg Coach
330	J. E. Rix	West Side	Allison 20290	Percheron
303	E. E. Marks	Dow City	Bon Atas 7754 (21171)	Shire
980	Peter J. Eggers.	Denison	Archie 34897	Percheron
981	Peter J. Eggers	Denison	Corbett 42790	Percheron
982	Peter J. Eggers.	Denison	Mont Dor 8977	French Draft
983	Schlichta Bros	Denison	Vulcan 26841	Percheron
964	B. B. White	Manilla	Montholon 10847	French Draft
965	B. B. White	Manilla	Young Maakoff 9651	French Draft
1151	W. H. Lamb	Denison	Decorah Jr. 32331	Trotter
1334	R. Knaul	Denison	Absola 43175	Trotter

CRAWFORD COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1004	Ricketts Horse Co	Ricketts	Zephir d'Herlaimont (Vol. 13, p. 478)	Belgian
1488	Fred Coleman	Charter Oak	Victor Dewey 45479	Percheron
1656	Peter Jensen	Charter Oak	Energy 745 (4788)	Belgian
1640	Ida and Sac County Percheron Horse Co	Kiron	Feder 40143 (51266)	Percheron
1700	T. E. Malloy	West Side	Hanksoid 33113	Trotter
2391	Chris Koock	Boyer	Bismark de Braibnt 1703 (25394)	Belgian
2494	Henry N. Kuehl	Schleswig	Beau Souvenir (15014)	Belgian
2648	F. J. Smith	Charter Oak	Parnell Beauty 9179	Clydesdale
2672	Kemp & Killeen	West Side	Victor 11478	French Draft
2673	James Killeen	West Side	Arizona 13138	French Draft
2566	H. C. Pithan & Herman Garbe	Charter Oak	Michaux 14893	French Draft
1940	H. H. Chapman & H. J. McGill	Vail	Tarascon 50552 (55555)	Percheron
2932	Adolf Meyer, Sr.	Charter Oak	Salvator 50219 (80080)	Percheron
3035	W. V. Whaley	Dow City	Iowa Wonder 44 (1672)	Suffolk
3140	C. A. Saunders	Manilla	Flanche 46481 (53966)	Percheron
3166	J. B. Gardner	Manilla	Mastique II De Vlieringen 1976 (28098)	Belgian
3253	Hugh Daugherty	Manilla	Titus 1735 (8969)	German Coach
3264	P. A. Klinkefus	Manilla	Sultan 285	Suffolk

DALLAS COUNTY.

131	J. B. Saum	Woodward	Sans Tache 22012 (43146)	Percheron
226	Martin Russell	Dallas Center	Wenona Regent 22564	Percheron
253	Belgian Horse Co	Redfield	Saint Martin (29462)	Belgian
317	Leon Mills	Perry	Banner 13189	French Draft
318	J. R. Mills	Perry	Narcisse 21992 (42440)	Percheron
324	W. B. Fritz	Dexter	Sergeant Major 8292 (21849)	Shire
336	T. P. Cushing	Booneville	Scarcliff Sweep (8173)	Shire
287	Thos. Eckert	Woodward	Jules 647	Belgian
652	Stootts & Kline	Redfield	Carral (54564)	Percheron
50	J. H. Andrew	Dexter	Earl Royal 37070	Trotter
637	R. S. Barr	Adel	Dan McCloud 43139	Trotter
636	R. S. Barr	Adel	Colonel McCoy 33112	Trotter
768	Robt. Burchfield	Linden	Rex Legrand 1993	Saddle Horse
658	W. S. Robinson	Dexter	Jim Kelly 43068	Trotter
626	De Soto Shire Horse Co	De Soto	Halstead Duke 7352 (20537)	Shire
409	J. F. Turner	Linden	Facteur 26913 (45803)	Percheron
767	Wm. A. Warford	Linden	Grant 9138	French Draft
1056	Dawson Draft Horse Co	Dawson	Fairfield Stormer 5673	Shire
1136	T. A. Thornburg	Linden	Maynard 10022	French Draft
1199	C. B. Pierce	Woodward	Major De Beaumont (20760)	Belgian
1401	D. C. Kelly	Dallas Center	Laurens 41030	Percheron
1480	M. B. Boll	Waukee	Flashlight Prince 7701	Shire
1489	Perry Belgian Horse Co	Perry	Vulcan 2235 (25410)	Belgian
1675	John Bair	Perry	Dewey 10974	French Draft
1676	John Bair	Perry	Bataclan 30587 (48721)	Percheron
1741	A. L. Myers	Dexter	Spartan's Hero 8428	Shire
1786	Belgian Horse Co	Dexter	Coco (10448)	Belgian
1825	A. W. Dickerson	Woodward	Hero-Ben 50251	Percheron
1836	J. R. Mills	Perry	Salem 15092	French Draft
1835	J. R. Mills	Perry	Minot 15090	French Draft
1834	J. R. Mills	Perry	Conrad 15087	French Draft
1833	Leon Mills	Perry	Constant 15086	French Draft
1840	Emery Skinner	Adel	Rapin 24496 (42413)	Percheron
2218	W. E. DuToit	Woodward	Abel 677 (581)	German Coach
2674	Elwood Beaseley	Adel	Linnwood 22566	Percheron
2461	H. C. Addy	Van Meter	Yacca 35903	Trotter
2569	I. C. Stine	Dallas Center	Iowa Chief 2569	Shire
2734	Theodore Quick	Dexter	Tuduc 14991 (57768P)	French Draft
2827	J. A. Minteer	Van Meter	Prince I. X. L. 43530	Trotter
3388	J. H. Andrew	Dexter	Victor 24128	Percheron

DAVIS COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
252	W. E. Irvin	R. No. 1, Floris	Enterprise 4047	Clydesdale
294	J. D. Baughman	Pulaski	Lightfoot 13749	French Draft
333	Jno. Augspurger	Pulaski	Titus 4669	Morgan
557	E. S. Stockman	Bloomfield	Togo 13764	French Draft
556	E. S. Stockman	Bloomfield	Tedy-R 34522	Percheron
592	B. F. Ritz	Pulaski	Fletcher 29112	Percheron
709	Wm. G. Brown	Bloomfield	Merak 9672	French Draft
972	L. C. Warthen	Bloomfield	Troubadour 26061 (46815)	Percheron
904	W. C. Baughman	Pulaski	Colonel 13015	French Draft
905	W. C. Baughman	Pulaski	Leroy II 14182	French Draft
906	W. C. Baughman	Pulaski	Initial 20030	Percheron
907	W. C. Baughman	Pulaski	Grand Papillon 29761	Percheron
1085	Albert Munn	Belknap	Major R. 10394	French Draft
1079	Peter B. Horn	Bloomfield	Brilliant 27209	Percheron
1054	W. W. Powers	Bloomfield	Jericarde 21857	Percheron
884	J. W. McConnell	Drakesville	Lorin 23700	Percheron
1165	N. E. Merry	Bloomfield	Jerome 9819	French Draft
1475	James McGowan	Bloomfield	Baron Laddie 39865	Trotter
1476	James McGowan	Bloomfield	Motell 40427	Trotter
1477	James McGowan	Bloomfield	Reed Bismont 34102	Trotter
1721	P. G. Martin	Bloomfield	Ecumeur 28457 (45983)	Percheron
2322	A. L. Watson	Pulaski	Delcarde (7510)	Percheron
2386	I. C. Evans	Troy	Andrew Carnagie 44363	Percheron
2388	J. & M. Horan	Floris	Samson 10395	French Draft
2679	C. F. Davis	Bloomfield	Beaucamp 19938	Percheron
2880	C. F. Davis	Bloomfield	Cap Sheaf II 43525	Percheron
2805	J. M. Peden	Floris	Noceur 11326 (26911P) (45829)	French Draft Percheron
2807	N. M. Peden	Floris	Gaylord 11867	French Draft
2817	Chas. Daugherty	Bloomfield	Theadore 34783	Percheron
2828	I. C. Evans	Troy	Picador 40385	Percheron
2943	Wm. J. Plank	Bloomfield	Daniel 13002	French Draft
3043	L. W. Cruikshank	Bloomfield	Big Fox 12798	Trotter
3118	A. A. Morgan	Bloomfield	Indi 30823	Trotter
3117	A. M. Swift	Bloomfield	Bonnie Dillon 30589	Trotter
3165	Cronk & Wise	Bloomington	Uncle Bob 9958	French Draft
839	C. B. Swartzendruver	Pulaski	Demon II 19407	Percheron

DECATUR COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
589	J. W. Mather	Lamoni	Glenbrino 30412	Trotter
565	J. S. Beavers	Woodland	Willingham Lad 5928 (18453)	Shire
649	A. Noble	Decatur	Joe Banker 6976	Shire
653	Pleasanton Horse Co	Pleasanton	Manuel (51817)	Percheron
984	E. P. Hamilton	Garden Grove	Ferndale 10529	French Draft
985	E. P. Hamilton	Garden Grove	Creston Jerry 6205	Shire
986	E. P. Hamilton	Garden Grove	Harbison 29900	Trotter
1264	W. M. Frost	Leon	Souldern Vulcan 7501 (20038)	Shire
1358	N. L. Chase	Garden Grove	Prince of Norwood 1358	French Draft
1504	C. E. Thompson	Leon	Major McKinley Jr. 955	Belgian
1135	Wm. Goodman	Leon	Admiral Sampson 24957	Percheron
2137	Wm. Goodman	Leon	Augerau 44037	Percheron
2246	E. Gregory	Weldon	Glendive 50155	Percheron
2249	S. E. Easter	Leon	Eastern Craftsman 6240 (19575)	Shire
2323	James Howell	Leon	Vampar 24560 (43505)	Percheron
2321	Van Wert Percheron Horse Co	Van Wert	Vaillant 50642 (55506)	Percheron
2333	Andover Draft Horse Co	Lamoni	Pekin 1701 (17450)	Belgian
488	H. L. Coontz	Woodland	Bury Ironclad 6692 (20332)	Shire
2447	Geo. P. Britt	Leon	Osceola Champion 11597	French Draft
87	Leon Horse Co	Leon	Luron D'Orbais 2257 (Vol. 12)	Belgian
2829	A. A. Rew	Lamoni	Prince Henry 8207	Shire

DECATUR COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2908	O. W. Hood	Le Roy	Nougat 22658 (43653)	Percheron
2937	Chas. Boor & E. H. Abraith	Le Roy	Mirko 640 (3934)	Belgian
3046	Theo. Brenizer	Lamoni	Faro d'Estinnes 2220 (29510)	Belgian
3083	Eden Prairie Shire Horse Co.	Leon	Highland Laddie 7950 (22976)	Shire

DELAWARE COUNTY.

122	E. W. Cook	Manchester	Conway Hercule 878	Belgian
671	Enterprise Horse Co	Ryan	Mouton (53341)	Percheron
746	Henry Goodhile	Manchester	Commodore Dewey 8883	Clydesdale
715	Henry Percival	Manchester	Ideal D. 14562	Trotter
919	W. A. Lang & Co	Greeley	Statesman 8359	Shire
920	W. A. Lang & Co	Greeley	Belmont 5077	Shire
921	W. A. Lang & Co	Greeley	Black Diamond 42423	Percheron
922	W. A. Lang & Co	Greeley	Surprise 40243	Percheron
923	W. A. Lang & Co	Greeley	Croissant (55623)	Percheron
924	W. A. Lang & Co	Greeley	Vaillant (60220)	Percheron
927	W. A. Lang & Co	Greeley	Bordeaux (57967)	Percheron
926	W. A. Lang & Co	Greeley	Filon (58848)	Percheron
925	W. A. Lang & Co	Greeley	Maupanant (60620)	Percheron
929	W. A. Lang & Co	Greeley	Bijou De Magnery 2230 (22924)	Belgian
930	W. A. Lang & Co	Greeley	Ulric 2231 (30936)	Belgian
933	W. A. Lang & Co	Greeley	Bibi 2229 (Vol. 13, p. 594)	Belgian
931	W. A. Lang & Co	Greeley	Zurich De Ronquieres 2233 (27594)	Belgian
934	W. A. Lang & Co	Greeley	Batard (Vol. 13, p. 564)	Belgian
935	W. A. Lang & Co	Greeley	Pierrot Du Moulin (36610)	Belgian
936	W. A. Lang & Co	Greeley	Marquis De Velroux (Vol. 13, p. 513)	Belgian
937	W. A. Lang & Co	Greeley	Sultan (37364)	Belgian
938	W. A. Lang & Co	Greeley	Cacas Wild (32040)	Belgian
939	W. A. Lang & Co	Greeley	Mouffle (37362)	Belgian
941	W. A. Lang & Co	Greeley	Chancelor (Vol. 14)	Belgian
942	W. A. Lang & Co	Greeley	Bourguinon (36950)	Belgian
943	W. A. Lang & Co	Greeley	Mikado (36916)	Belgian
945	W. A. Lang & Co	Greeley	Werther (Vol. 13, p. 287)	Belgian
946	W. A. Lang & Co	Greeley	Max De Bove 946	Belgian
947	W. A. Lang & Co	Greeley	Vaillant De Letrud (37360)	Belgian
946	W. A. Lang & Co	Greeley	Bijou Du Moulin (36608)	Belgian
949	W. A. Lang & Co	Greeley	Roustan (33822)	Belgian
1087	W. B. Van Alstyne	Manchester	Osceola Prince 5988	Shire
1117	H. Pugh	Ryan	Bahno 38751	Trotter
1116	H. Pugh	Ryan	Favorite 30151	Percheron

DELAWARE COUNTY—Continued.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1413	Ryan Horse Co.	Ryan	Gelif 27109 (45385)	Percheron
1609	F. W. Smith	Manchester	Capricorne 1609	Percheron
1767	Geo. Coldsborough	Dundee	Lexington Macey 26408	Trotter
1821	A. B. Holbert	Greeley	Clamart (57369)	Percheron
1863	A. B. Holbert	Greeley	Tonsin (28530)	Belgian
1865	A. B. Holbert	Greeley	Stuntney Arsaces (23729)	Shire
1866	A. B. Holbert	Greeley	Stuntney Sagamore (23828)	Shire
1867	A. B. Holbert	Greeley	The Baron VII (23930	Shire
1868	A. B. Holbert	Greeley	Rip Van Winkle (23640)	Shire
1869	A. B. Holbert	Greeley	Stuntney Button (23743)	Shire
1870	A. B. Holbert	Greeley	Mark Time (23487)	Shire
1872	A. B. Holbert	Greeley	Noble Prince II (22629)	Shire
1873	A. B. Holbert	Greeley	Redlynch Mentor (22716)	Shire
1874	A. B. Holbert	Greeley	Cherry Farmer (23155)	Shire
1875	A. B. Holbert	Greeley	Tansor Prince (22848)	Shire
1876	A. B. Holbert	Greeley	Stone Ashton Nabob (23730)	Shire
1877	A. B. Holbert	Greeley	Troag Conqueror (23931)	Shire
1879	A. B. Holbert	Greeley	Boxeur D'Oplinter 2384 (33012)	Belgian
1880	A. B. Holbert	Greeley	Bebe De Hex 2383 (33352)	Belgian
1881	A. B. Holbert	Greeley	Cresus D'Ap 2385 (36920)	Belgian
1882	A. B. Holbert	Greeley	Pierrot De Kemexhe 2390 (37428)	Belgian
1883	A. B. Holbert	Greeley	Zut 2393 (30746)	Belgian
1884	A. B. Holbert	Greeley	Brigadier 2380 (25444)	Belgian
1885	A. B. Holbert	Greeley	Bourguignon 2382 (Vol. 13, p. 698)	Belgian
1887	A. B. Holbert	Greeley	Capitaine De Questenne 2474 (28324)	Belgian
1888	A. B. Holbert	Greeley	Joubert D'Enixhe 2476 (Vol. 13, p. 469)	Belgian
1889	A. B. Holbert	Greeley	Midas 2480 (Vol. 13, p. 935)	Belgian
1890	A. B. Holbert	Greeley	Ortoni 2481 (Vol. 13. p. 620)	Belgian
1891	A. B. Holbert	Greeley	Bruno De Hartenge 2472 (Vol. 13, p. 528)	Belgian
1892	A. B. Holbert	Greeley	Syveton 2482 (Vol. 13, p. 619)	Belgian
1893	A. B. Holbert	Greeley	Marin II 2479 (36496)	Belgian
1894	A. B. Holbert	Greeley	Bayard Bierse 2473 (34696)	Belgian
1895	A. B. Holbert	Greeley	Le Dernier 2478 (35462)	Belgian
1896	A. B. Holbert	Greeley	Teutone (2154)	Belgian
1897	A. B. Holbert	Greeley	Triumpf (2153)	Holstein Coach
1898	A. B. Holbert	Greeley	Turner (2155)	Holstein Coach
1899	A. B. Holbert	Greeley	Trompeter (2152)	Holstein Coach
1900	A. B. Holbert	Greeley	Rittmeister (2085)	Holstein Coach
1901	A. B. Holbert	Greeley	Goldfellow 3507	German Coach
1902	A. B. Holbert	Greeley	Waldemar 2507	German Coach
1903	A. B. Holbert	Greeley	Conscil 50515 (63464)	Percheron
1904	A. B. Holbert	Greeley	Milan 50543 (59935)	Percheron
1905	A. B. Holbert	Greeley	Charmant 50512 (59938)	Percheron
547	Wm. J. Claus	Delaware	Joe Anderson 40174	Percheron
1906	A. B. Holbert	Greeley	Arlequin 50503 (62524)	Percheron
1907	A. B. Holbert	Greeley	Tartarin 50553 (55554)	Percheron
1908	A. B. Holbert	Greeley	Idem 50530 (63371)	Percheron
1909	A. B. Holbert	Greeley	Lutteur 50539 (57156)	Percheron
1910	A. B. Holbert	Greeley	Avenir D'Erbi 2381 (29458)	Belgian
1911	A. B. Holbert	Greeley	Grain D' Or D' Awans 2387 (32418)	Belgian
1912	A. B. Holbert	Greeley	Hercule De Vald (33290)	Belgian
1913	A. B. Holbert	Greeley	Puissant (33288)	Belgian
1915	A. B. Holbert	Greeley	Biocorde 50625 (63288)	Percheron

DELAWARE COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1916	A. B. Holbert	Greeley	Coquet 50626 (64336)	Percheron
1917	A. B. Holbert	Greeley	Krasis 50630 (63567)	Percheron
1918	A. B. Holbert	Greeley	Louvigny 50531 (63539)	Percheron
1919	A. B. Holbert	Greeley	Martinet 50532 (58905)	Percheron
1920	A. B. Holbert	Greeley	Herien 50629 (63373)	Percheron
1921	A. B. Holbert	Greeley	Glorieux 50628 (56527)	Percheron
1922	A. B. Holbert	Greeley	Pollux 50633 (58788)	Percheron
1923	A. B. Holbert	Greeley	Rosier 50635 (55147)	Percheron
1924	A. B. Holbert	Greeley	Eldorado 50627 (60095)	Percheron
1925	A. B. Holbert	Greeley	Retour 50634 (61618)	Percheron
1927	A. B. Holbert	Greeley	Turbot 50555 (56725)	Percheron
1928	A. B. Holbert	Greeley	Ictere 50533 (63372)	Percheron
1939	A. B. Holbert	Greeley	Liao 50537 (62479)	Percheron
1930	A. B. Holbert	Greeley	Lusignan 50538 (62499)	Percheron
1931	A. B. Holbert	Greeley	Marceau 50541 (62874)	Percheron
1932	A. B. Holbert	Greeley	Mathurin 50542 (59438)	Percheron
1933	A. B. Holbert	Greeley	Madrid 50540 (53077)	Percheron
1934	A. B. Holbert	Greeley	Pomard 50547 (55615)	Percheron
1935	A. B. Holbert	Greeley	Philosophe 50546 (61833)	Percheron
1936	A. B. Holbert	Greeley	Polhuau 50548 (62463)	Percheron
1937	A. B. Holbert	Greeley	Roussillon 50550 (62156)	Percheron
1938	A. B. Holbert	Greeley	Ramoneur 50549 (62475)	Percheron
1939	A. B. Holbert	Greeley	Telephone 50554 (60100)	Percheron
1941	A. B. Holbert	Greeley	Talma 50551 (62500)	Percheron
1942	A. B. Holbert	Greeley	Vainqueur 50557 (54334)	Percheron
1943	A. B. Holbert	Greeley	Vallon 50559 (63026)	Percheron
1944	A. B. Holbert	Greeley	Vibrant 50560 (59941)	Percheron
1946	A. B. Holbert	Greeley	Turco 50556 (62731)	Percheron
1948	A. B. Holbert	Greeley	Armor 50505 (62317)	Percheron
1949	A. B. Holbert	Greeley	Amiral 50501 (61712)	Percheron
1950	A. B. Holbert	Greeley	Arlequin 50504 (63767)	Percheron
1951	A. B. Holbert	Greeley	Bardoux 50536 (62831)	Percheron
1952	A. B. Holbert	Greeley	Bataclan 50506 (62478)	Percheron
1953	A. B. Holbert	Greeley	Brillant 50508 (53950)	Percheron
1954	A. B. Holbert	Greeley	Cointeyr 50511 (52724)	Percheron
1955	A. B. Holbert	Greeley	Biscuit 50507 (63791)	Percheron
1956	A. B. Holbert	Greeley	Castor 50510 (59937)	Percheron
1957	A. B. Holbert	Greeley	Cabaster 50509 (63079)	Percheron
1958	A. B. Holbert	Greeley	Considerant 50516 (60084)	Percheron
1959	A. B. Holbert	Greeley	Costo 50517 (63970)	Percheron
1960	A. B. Holbert	Greeley	Chatlet 50513 (57372)	Percheron
1961	A. B. Holbert	Greeley	Docteur 50520 (64995)	Percheron
1962	A. B. Holbert	Greeley	Derval 50519 (62567)	Percheron
1963	A. B. Holbert	Greeley	Eclat 50521 (63212)	Percheron
1964	A. B. Holbert	Greeley	Ecorpain 50522 (62488)	Percheron
1965	A. B. Holbert	Greeley	Edison 50523 (63119)	Percheron
1966	A. B. Holbert	Greeley	Estival 50524 (63653)	Percheron
1967	A. B. Holbert	Greeley	Etudiant 50525 (63073)	Percheron
1968	A. B. Holbert	Greeley	Facteur 50526 (64154)	Percheron
1969	A. B. Holbert	Greeley	Fierot 50527 (62666)	Percheron
1970	A. B. Holbert	Greeley	Flerridalenzen 50528 (63948)	Percheron
1971	A. B. Holbert	Greeley	Harley 50532 (61724)	Percheron
1972	A. B. Holbert	Greeley	Farino 50665 (62885)	Percheron
1973	A. B. Holbert	Greeley	Racine 50666 (60613)	Percheron
1995	A. B. Holbert	Greeley	Passe Partout 2389 (35570)	Belgian
1996	A. B. Holbert	Greeley	Garcon de Bothey 2386 (Vol. 13, p. 600)	Belgian
1997	A. B. Holbert	Greeley	Marquis de Bleret 2388 (35988)	Belgian
1998	A. B. Holbert	Greeley	Valerien 50558 (62497)	Percheron
1999	A. B. Holbert	Greeley	Pedro 50545 (55549)	Percheron
2000	A. B. Holbert	Greeley	Guignol 50531 (57894)	Percheron
2095	Peter Milroy	Hopkinton	Heor 23943	Percheron
2096	Peter Milroy	Hopkinton	Sampson 26529	Percheron
2097	Peter Milroy	Hopkinton	Bravo 22166	Percheron
2098	Peter Milroy	Hopkinton	La-Forte 34839	Percheron
2099	Peter Milroy	Hopkinton	Castelar I 29842	Percheron
2278	J. D. Moulton	Hopkinton	Friedland (45001)	Percheron
2419	A. B. Holbert	Greeley	Stuntney Bulbo 888 (9557)	Hackney
2420	A. B. Holbert	Greeley	Blanch Bombey 890 (9554)	Hackney
2421	A. B. Holbert	Greeley	Ely Orel 884 (9209)	Hackney

DELAWARE COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2422	A. B. Holbert	Greeley	Misty Morn 885 (9344)	Hackney
2423	A. B. Holbert	Greeley	B. B. Crispy 886 (9113)	Hackney
2424	A. B. Holbert	Greeley	Duke of the Hills 882 (9199)	Hackney
2425	A. B. Holbert	Greeley	Priory Prince 887 (9556)	Hackney
2426	A. B. Holbert	Greeley	Stuntney Extradition 883 (9031)	Hackney
2663	Barryville Horse Co	Ryan	Mercure 24743 (44027)	Percheron
1575	Henry Goodhile	Manchester	J. S. Ricker 37168	Trotter
2565	L. C. Reardon	Hopkinton	Marcara Charming 10837	Clydesdale
2578	John Rosa	Masonville	Perche 26562 16185	Percheron and French Draft
2733	F. L. Carpenter	Almoral Station	Jann de Teny (32016)	Belgian
2801	A. B. Holbert	Greeley	Regulus 43894	Percheron
2927	A. B. Holbert	Greeley	Joubert II (Vol. 12, p. 847)	Belgian
2488	L. B. Stanger	Hopkinton	Primo 25604 (44596)	Percheron
3016	A. B. Holbert	Greeley	Baron Willerby 889 (8730)	Hackney
1878	Edward Cook	Manchester	Sultan de Kemexhe 2391 (37430)	Belgian

DES MOINES COUNTY.

165	Henry Broder	Mediapolis	Major 41821	Percheron
164	Henry Broder	Mediapolis	Alger 23049 (42014)	Percheron
163	Henry Broder	Mediapolis	Fusain 42804 (58230)	Percheron
82	James D. Smyth	Burlington	Entertainer 26774	Trotter
1228	James D. Smyth	Burlington	King Entertainer 0706	Trotter
795	John Sutcliff	Sperry	Selim 8970	French Draft
2251	Henry Heilner	Danville	Hard to Get 1350 (7356)	Shire
2407	Clyde Featherby	Yarmouth	Menominee 8531 (23494)	Shire
2360	J. H. Thie	Middletown	Autumn Haze 21682	Trotter
860	Burlington Percheron Horse Co	Burlington	Cheri 9319	French Draft

DICKINSON COUNTY.

518	G. B. Wilson	Milford	Ludovicus 6412 (8932)	Percheron
373	J. H. Mills	Lake Park	Ignace 22888 (42345)	Percheron
355	P. S. Mott	Spirit Lake	Trim 32061	Percheron
110	G. R. Bryan	Spirit Lake	Superior 30324	Percheron
181	D. V. Palmer	Lake Park	Red Ensign 18330	Trotter
204	Clark L. Nicol	Milford	Prince of Clayton 4698	Clydesdale
437	G. N. Welch	Milford	King Capoul 38364	Trotter
574	H. H. & B. H. Overhocker	Milford	Verona Matchless 6483	Shire
406	P. Hagerty	Hagerty	Iams' Bon Ton 17443	Percheron
833	F. N. Reese & C. M. Varney	Terril	Talisman 27116 (45621)	Percheron
797	D. V. Palmer	Lake Park	Butor 25152 (44160)	Percheron
2475	Geo. Heldridge	Milford	Radis 29506 (48415)	Percheron
2476	Geo. Heldridge	Milford	Rainbow (8222)	Percheron
2547	Jas. Chapman	Terril	Adrien 29536 (46939)	Percheron
2555	D. V. Palmer	Lake Park	King Moak Jr. 42203	Trotter
2881	Henry N. Meyer	Lake Park	Sampson 22284	Percheron
838	A. R. Vangrendren	Lake Park	Wenona Marmion 4768	Shire
2358	E. F. Miller	Milford	Christopher C. 31413	Trotter
3091	P. T. Burk	Milford	Brown L. 34543	Trotter

DUBUQUE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
952	M. J. Noonan	Bernard	Croiseur 24675 (45290)	Percheron
953	M. J. Noonan	Bernard	Martial 42724 (60151)	Percheron
954	M. J. Noonan	Bernard	Briard 10794 (12252)	Percheron
1055	Thos. F. Connolly	Bernard	Midnight 44254	Percheron
1249	Jno. Connolly	Bernard	Caesar (60096)	Percheron
1331	Benjamin Witter	Specht's Ferry	Duncan 20584	Percheron
1344	Connelly & Kelley	Farley	Goldzil 1344	Trotter
1364	F. P. Kern	Dyersville	Danton 1258 (24346)	Belgian
1366	Anton B. Kern	New Vienna	Barn de Thisnes 1181 (17890)	Belgian
1453	C. D. Mills	Peosta	Charley M. 17137	Trotter
1465	Jno. Breitbach	Peosta	Militor 29986 (45039)	Percheron
1979	The Cascade Horse Co	Cascade	Keota Dalrymple 31847	Percheron
1978	The Cascade Horse Co	Cascade	Jolly 5230	Shire
1977	The Cascade Horse Co	Cascade	Tam O'Shanter 8018	Clydesdale
2489	J. J. Hittemiller	Dyersville	Tom Sherwood 35157	Trotter
1914	Rickardsville & Holy Cross Horse Co	N. Buena Vista	Sultan Rion 2392 (Vol. 14, p. 483)	Belgian
2617	M. F. Barrett	Cascade	Keota Miteau 18871	Percheron
2618	M. F. Barrett	Cascade	Archer 41143 (60113)	Percheron
2619	M. F. Barrett	Cascade	Spender 43919 (59747)	Percheron
2620	M. F. Barrett	Cascade	Trois-Sous 1444 (25308)	Belgian
2625	Frank Kunkel	Dyersville	Abseon 1551 (21364)	Belgian
2626	Frank Kunkel	Dyersville	Gugus de la Bruyere 1653 (18990)	Belgian
2649	Ira Murphy	Dubuque	Baron Nitron 5202 (32190)	Morgan Trotter
2535	Ben Witter	Specht's Ferry	Herisson 46044 (62164)	Percheron
2823	Farley Belgian Horse Co	Farley	Belle Face 1254 (12918)	Belgian
2864	Jacob Foxen	Dyersville	Laboureur II 1262 (21720)	Belgian
1886	New Vienna and Petersburg Horse Breeders' Association	Dyersville	Gustave 2475 (34418)	Belgian
940	R. J. Kennedy	Zwingle	Prince II (36894)	Belgian
3356	Dyersville Horse Co	Dyersville	Courageux 31286 (48933)	Percheron

EMMETT COUNTY.

397	Taylor & Kenline Bros	Wallingford	Highland Dandy 22542	Percheron
297	B. H. Knipe	Armstrong	The Parrot 34862	Trotter
298	B. H. Knipe	Armstrong	Boss 20815	Percheron
310	T. E. Kent	Estherville	Grand Victor 30645	Percheron
862	A. J. White	Estherville	Paul 248	Oldenbr'g Coach
1011	Mathews & Dundas	Armstrong	Ormeau 22800 (42922)	Percheron
959	Estherville and Superior Horse Co	Estherville	Ussy 29561	Percheron
1241	J. D. Weir	Huntington	Khedive 11651	French Draft
1242	J. D. Weir	Huntington	Gallopore 32604	Percheron
1421	R. E. Woods	Estherville	Pythian 3640	French Coach
2491	G. W. Small	Estherville	King Edward 6947	Shire
371	Robt. West & Walter Willett	Estherville	Cyclone 833	Belgian
863	Robt. & F. L. West	Estherville	Petronius 21143	Percheron
301	Robt. West	Estherville	Pluton II 1209 (21736)	Belgian
2445	Felix Kriebs	Huntington	Bud 11652	French Draft

EMMETT COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2777	G. E. Moore	Wallingford	Docile 42910	Percheron
2778	G. E. Moore	Wallingford	Armando 46270	Percheron
2779	G. E. Moore	Wallingford	Pathologist 42202	Trotter
2780	G. E. Moore	Wallingford	Franklin Audubon 38936	Trotter
1240	Ben Johnson	Huntington	Plunger 32603	Percheron
3092	G. E. Moore	Wallingford	Howard Yorke 40259	Trotter

FAYETTE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
296	Ashbaugh Bros	Maynard	Brillando 29729	Percheron
5	J. C. Darnell	Randalia	Kansas King 13813	Percheron
573	R. & L. Oldfather	Arlington	Triomphe (59513)	Percheron
1178	John Peters	Oelwein	Bon Courage 42879 (57093)	Percheron
1201	Chauncey W. Smith	Arlington	LaSalle 21566	Percheron
1208	Belgian Draft Horse Co	Hawkeye	Plein D'Or 949 (16836)	Belgian
1209	G. A. Wescott	Arlington	Red Stripe 39043	Trotter
1256	J. B. & C. W. Turner	Randalia	Eris 2070 (16702)	Belgian
1296	G. D. Darnall	West Union	Allerian 21724	Trotter
1297	G. D. Darnall	West Union	American Russell 21723	Trotter
1298	G. D. Darnall	West Union	Goldfire 31395	Trotter
1299	G. D. Darnall	West Union	J. A. B. D. 40744	Trotter
1410	Allen Doty	Westgate	Baron 521	German Coach
1687	J. S. McSweeney	Oelwein	Cliquant 31281 (46680)	Percheron
1706	E. L. Nus	Arlington	Brown William 45816	Percheron
1707	E. L. Nus	Arlington	William Adelbert 7900	Shire
1708	E. L. Nus	Arlington	Demblon de Dick (32920)	Belgian
1709	E. L. Nus	Arlington	Botha de Wyn (33298)	Belgian
1981	Westgate Horse Co	Westgate	Telemaque du Hazoir (28346)	Belgian
1986	Fred Field	Oelwein	Calvado 42500	Percheron
1987	Fred Field	Oelwein	Irgos 20033	Percheron
2029	E. L. Nus	Arlington	Big Ben 43401	Percheron
2245	Shaffer & Humphrey	West Union	Vigoureux 27390 (48267)	Percheron
2342	F. W. Keil	Oelwein	Cavalier 16207	Percheron
2068	Henry Reicks	St. Lucas	Martin d'Enixhe 2298 (36640)	Belgian
2524	Waucoma Horse Breeders' Ass'n	Waucoma	Ravault 11285 (3477)	French Draft
2616	Geo. Connell	Fayette	Fanchon 14108 (6279) B	French Draft
1699	J. W. Whitely Horse Co	Fayette	Leopard of Oakhurst 8455 (21596)	Shire
3080	C. R. Ashbaugh & S. C. Stewart	Maynard	Avalon 45047	Percheron
3137	Gunder Horse Co	Elgin	Vigoureux 27127 (46915)	Percheron
3160	E. T. Foley	West Union	Leon de Zellick (29564)	Belgian
3214	E. L. Nus	Arlington	Quality 15766	French Draft

FLOYD COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
385	P. P. French	Rudd	The Sarpent 34861	Trotter
134	G. E. Andree	Charles City	Rene II 21276 (42468)	Percheron
135	G. E. Andree	Charles City	Rempart 26915 (45839)	Percheron
276	Henry Moll	Rockford	Floyd Jim 43950	Percheron
275	Henry Moll	Rockford	Aiglon 26585	Percheron
274	Henry Moll	Rockford	Sampson 31414	Percheron
273	Henry Moll	Rockford	Molke XV 2299	German Coach
494	Henry Gates	Marble Rock	Admiral Dewey 6241	Shire
694	John Bishop	Nora Springs	Cleanthe Jr. 28127	Percheron
826	Marble Rock Horse Co	Marble Rock	Bambinos 25024 (43012)	Percheron
1039	Albert Gates	Marble Rock	Hercule 43747 (55020)	Percheron
1305	Henry Stocker	Charles City	Prince Hilton 40795	Percheron
1306	Fred C. Krueger	Charles City	Durbin 32181	Percheron

FLOYD COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1307	Fred C. Krueger	Charles City	New Cut 6900	Shire
1308	Fred C. Krueger	Charles City	General Dewey 2047 (33324)	Belgian
1309	Fred C. Krueger	Charles City	Captain Jr. 1431	French Coach
1310	Fred C. Krueger	Charles City	Intrepide 645	French Coach
1332	Carbeiner & Barber	Marble Rock	Gaston Hemel (15918)	Belgian
1333	Carbeiner & Barber	Marble Rock	Evade de Peponghen 1887 (28074)	Belgian
1672	F. H. Leaman	Rockford	Success 4478	Percheron
1673	F. H. Leaman	Rockford	Voltaire 22526	Percheron
1696	L. M. Smith	Marble Rock	Ferris 25102	Trotter
2262	L. V. Humphrey	West Union	Forton de Zuevy (16362)	Belgian
2595	Fred C. Krueger	Charles City	Latourna 41879	Percheron
2596	Fred C. Krueger	Charles City	LaMont 42155	Percheron
2597	Fred C. Krueger	Charles City	Lavern 42039	Percheron
2598	Fred C. Krueger	Charles City	Voyageur 41599	Percheron
2690	H. J. Stoecker	Charles City	Quivit 2431 (36386)	Belgian
2825	Henry Moll	Rockford	Loubet 48225	Percheron

FRANKLIN COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1422	West Side Horse Co	Sheffield	Murrow Free Lance 7752	Shire
1170	C. J. Bigg	Sheffield	Emit Eversole 21620	Trotter
1138	J. S. Mulkins	Hampton	Elder Pom Pom 6599 (19587)	Shire
707	H. H. Marble	Hampton	Foudryeur 2202 (26756)	Belgian
1610	Henry Pralle	Latimer	Keota Allen 5802	Shire
1611	Fahrmann Sons & Paullus	Latimer	Garby 22666 (43490)	Percheron
1637	A. M. Craighton	Hampton	Sir Wilfred 9538	Clydesdale
1758	Chas. Harrison, P. J. Monahan & D. A. Stilson	Hampton	Barbazo (6010)	French Draft
2520	Geo. O'Terrill	Sheffield	Victor 43608	Percheron
2521	J. D. & P. Eslinger	Sheffield	Colin 27551 (48309)	Percheron
2577	J. P. Brown	Hampton	King 22597	Percheron
2695	N. Thomas	Sheffield	Montrave Rupert 10551	Clydesdale
2792	H. W. Iblings	Geneva	Consonant (Vol. 7)	German Coach
2853	H. R. Esslinger	Chapin	Amboy 14330	French Draft
1871	A. C. F. Voy	Ackley	Horbling Shamrock 8664 (23929)	Shire
1945	John P. Peters	Ackley	Volta 50561 (62453)	Percheron
2910	G. H. Washburn	Hampton	Ben Storing 4841	Morgan

FREMONT COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
17	L. Chambers	Bartlett	Halle 198	Oldenb'rg Coach
18	L. Chambers	Bartlett	Sir Jacques 16018	Belgian
19	L. Chambers	Bartlett	Apollo 3247	Shetland
21	O. E. Coulter	Farragut	Roosevelt 35683	Percheron
68	Wm. C. Johnson	Randolph	Bob Chariton 31430	Trotter
69	Wm. C. Johnson	Randolph	Roscoe II 19422	Percheron
74	A. M. McMahill	Tabor	Cyrano (43606)	Percheron
124	S. A. Chambers, Secy	Anderson	Tullus 214	Oldenberg Coach
154	I. E. Burdick & W. H. Wadell	Farragut	Balanfal 35379	Percheron
240	Lee Meek	Riverton	Roosevelt 33172	Percheron
987	Fred H. Martin	Sidney	Prince 50265	Percheron
1065	Jas. H. Miller	Farragut	Pacifidue 40395 (48534)	Percheron
2153	Pleasant Grove Percheron Horse Co	Sidney	Sansonnet 41411 (57672)	Percheron
2154	Percheron Knox Horse Co	Knox	Duguesclin 41422 (57775)	Percheron
3030	Clover Wave Horse Co	Hamburg	Lilas 40291 (57378)	Percheron

GREENE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
260	J. Elmer Smith	Jefferson	Major II 26782	Percheron
564	Schneider Bros	Grand Junction	Zanoni (25506)	Belgian
9	W. W. Anderson	Scranton	LaPerchie 30869	Percheron
408	Ira Batcheller	Paton	Sound Money 7050	Shire
407	Albert Head	Jefferson	Chief Ambassador 37525	Trotter
1216	L. L. Wright & J. E. Hammar	Scranton	Collegian 41317	Percheron
1397	E. H. Jackson	Jefferson	Constantine 20381	Percheron
1553	Thos. Toyne, Sr.	Adaza	Wayside Tarbroech 9838	Clydesdale
1613	Wm. Grivey	Dana	Milord de Reille 979 (13990)	Belgian
1614	Wm. Grivey	Dana	Breteuil 24815 (44482)	Percheron
1632	Percheron Horse Co	Jefferson	Marius de Lil 1273 (19784)	Belgian
1626	C. Picht	Churdan	Prince 10236	French Draft
1625	C. Picht	Churdan	Gerant 22351 (42893)	Percheron
1647	R. N. Flack	Churdan	George 40782	Percheron
1698	Michael Coyne	Jefferson	Admiral Sampson 19976	Percheron
1374	Harry W. Cole	Cooper	Nicodemus 21754	Percheron
2326	F. B. Anderson	Jefferson	Gervais 47758 (55415)	Percheron
2066	R. N. Flack	Churdan	Attaban de Givry 2282 (Vol. 13)	Belgian
2478	G. A. Wiggins	Cooper	King Leopold 862½	Belgian
2527	C. A. Flack	Grand Junction	Electeur 50858 (55883)	Percheron
2503	Chas. Holmes	Rippey	Bambin 21263 (41034)	Percheron
2858	Grand Junction Horse Co	Grand Junction	Bonneval II 32327 (45505)	Percheron
2978	D. W. Holmes	Scranton	Lewiston 33861	Trotter
3008	D. R. Tittgers	Rippey	Echo's Chief 4590 (13026)	Shire
3012	Kendrick Percheron Horse Co	Scranton	Lambert 44955 (52685)	Percheron
3022	Cornelius Picht	Churdan	Monarch 15404	French Draft
3023	S. D. Newcomb	Adaza	Bleu 2061 (29620)	Belgian
3024	S. D. Newcomb	Adaza	Thomas 14103 (6282) B.	French Draft
3218	Joe Bridgett	Jefferson	Guyanolus 42981	Trotter
3251	Peter Renburg	Paton	Robespierre 32336	Percheron

GRUNDY COUNTY.

892	Clay Township Percheron Horse Co	Conrad	Touraine 40953	Percheron
1082	O. D. Hilmer	Reinbeck	Histro F. 35686	Trotter
1415	Miller & Shirk	Grundy Center	Bichon 40190 (51206)	Percheron
1427	Felix - Melrose Horse Co	Conrad	Seduisant 29530 (45257)	Percheron
2007	P. J. Baasch	Conrad	B. Favori 41310	Percheron
2008	P. J. Baasch	Conrad	B. Success 43985	Percheron
2169	M. C. Pattee	Reinbeck	Paul 44695	Percheron
2222	Fred J. Frost	Grundy Center	Prince Cameron 10526	Clydesdale
2221	Fred J. Frost	Grundy Center	All Right 245	Oldenburg Coach
2257	Samuel Deitrick	Conrad	Tomtom (6025)	French Draft
2267	John Tjaden	Wellsburg	Brilliant 30572 (47001)	Percheron
2042	South Felix Horse Co	Conrad	Durand 41436 (60779)	Percheron
2757	W. C. Hiatt	Conrad	Negro 46183 (59429)	Percheron
2815	Canotier Percheron Horse Co	Grundy Center	Canotier 45607 (53890)	Percheron
2847	T. K. Saul	Reinbeck	MacGill 8789	Clydesdale
2912	A. F. Weiss	Reinbeck	Bedford 141	Hackney
3225	Adolph Albert	Reinbeck	Vainqueur (Vol. 12)	Belgian

GUTHRIE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1091	Hackney Horse Co	Panora	Conroy 633 (8423)	Hackney
1187	J. M. Sheehan	Stuart	Amant 24448 (42918)	Percheron
1203	H. C. Miner	Stuart	Blaisdon Luck 5385 (14992)	Shire
769	Gilman J. Turner	Panora	King Cole 5218	Shire
770	Gilman J. Turner	Panora	Annas 41370 (56958)	Percheron
692	James E. Junk	Stuart	Rocher 40091 (46496)	Percheron
696	Wichita Belgian Horse Co	Wichita	Brilliant de Hemptinne (15692)	Belgian
571	A. D. Dickey	Jamaica	F. Northway 20634	Trotter
572	A. D. Dickey	Jamaica	Eastern Topman 6308	Shire
1577	C. B. McGinnis	Casey	Dagmar's Prince 11944	Clydesdale
46	Yale Draft Horse Co	Yale	Compagnon 1298 (24830)	Belgian
1576	C. B. McGinnis	Casey	Haven's Pride 12534	Clydesdale
47	Yale Draft Horse Co	Yale	Diamont 11532 (44766)	French Draft
48	I. C. Sheets	Yale	Midday Sun 34656	Trotter
109	J. T. Wasson	Panora	Teddy R. 0627	Trotter
101	Jamaica Horse Co	Jamaica	Corisier 29485 (45168)	Percheron
1567	J. B. Foltz	Stuart	Adair Medium 31596	Trotter
1598	S. M. Ash	Bayard	Victor Hugo 42976	Percheron
2109	Jas. H. Pearce	Stuart	Lallie 7507	Shire
2118	J. M. McPherson & Son	Stuart	Richard Mac 37313	Trotter
2119	J. M. McPherson & Son	Stuart	McMahon 22174	Percheron
2327	H. A. Saemisch	Jamaica	Flambart 40741 (58618)	Percheron
2612	D. W. Anderson	Bagley	Dewan 41929	Trotter
2613	D. W. Anderson	Bagley	Lextus 41930	Trotter
2668	S. J. Kirkpatrick & F. W. Kading	Casey	Babillard 12924 (53529) P	French Draft
2820	S. B. Keating and J. S. Low	Stuart	Sultan 18400	Percheron
2844	A. E. Colby	Guthrie Center	Shadalmont 25535	Trotter
2893	J. B. Foltz	Stuart	Tartan 12024	Clydesdale
2907	A. G. Sodaberger	Casey	Baron's Hope 12023 (11606)	Clydesdale
2936	Jerry Dewan	Bayard	The Bishop 30326	Trotter
1711	J. F. Maddick	Panora	Massoud 946 (16918)	Belgian
3002	Chas. A. Reed	Menlo	Jocoon 44954	Trotter
3052	Bear Grove Percheron Horse Co	Bear Grove	Quande Meme 34246 (45888)	Percheron
693	J. F. Armentrout & P. McDaniels	Stuart	Val St. Pair 3184	French Coach
3232	Wilson Bros	Menlo	Iowa Sphinx Jr. 33654	Trotter
3233	Menlo Horse Co	Menlo	Pernod 40015 (53570)	Percheron
3239	F. J. Boyd	Menlo	Van Toler 36478	Trotter
3249	Leroy Culbertson	Panora	Black Knight 12663 (13244)	Clydesdale

HAMILTON COUNTY

327	Geo. H. Daniels	Webster City	Phil Frye 42574	Trotter
515	Marion Horse Co	Stratford	Renard 27115 (45189)	Percheron
499	L. C. Rood	Webster City	Sir William R. 0729	Trotter
115	Naylor & Milburn	Stratford	Sans Gene 40039 (45012)	Percheron
177	E. C. Brewer	Stanhope	Milord (21662)	Belgian
62	E. T. Freidrich	Stratford	Merry Morgan 5032	Morgan
63	S. J. Cottington	Stratford	Commodore 7741	Shire
28	F. C. Ruegnitz	Stratford	Parson 2964	Shetland
11	Carl Bentson	Jewell	Diamond Dick 2608	French Coach
581	Belgian Horse Co. of Homer	Stratford	Copian (33172)	Belgian
561	E. C. Brewer	Stanhope	Prince Charming 10801	Clydesdale

HAMILTON COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
686	Wall Lake Horse Co	Jewell	Dessinateur 31050 (46073)	Percheron
631	F. C. Gearhart	Ellsworth	Silver Seal 31379	Trotter
630	F. C. Gearhart	Ellsworth	Distingue 22349 (42854)	Percheron
842	J. C. Cochran	Jewell	Keota Emperor 21670	Percheron
1095	Lincoln Percheron Horse Co	Jewell	Keota Moireau 20212	Percheron
1068	Bendix Olsen	Stanhope	Prince 19179	Percheron
1404	Stanhope Horse Co	Stanhope	Keota Emperor 22123	Percheron
1529	John Ely	Webster City	Aurillac 23066 (44571)	Percheron
1759	Helmick & Son	Webster City	Carlin 27816 (48389)	Percheron
2300	Frank Ross	Blairsburg	Oscar 26933 (45805)	Percheron
2331	Swanson & Rodine	Stratford	Bijouti 1843 (26488)	Belgian
2337	Ward Deffenbaugh	Webster City	Fayette Duluth 1519	Saddler
2463	J. F. & Sam De France	Webster City	King Al 42749	Trotter
2464	J. F. and Sam De France	Webster City	Lerian 44072	Trotter
2756	A. C. Henderson	Williams	Mon Caprice 2620 (25434)	Percheron
100	John T. Omvig	Randall	Torpilleur 27849 (44008)	Percheron
1770	Peter Hove	Stanhope	Envoy 28264	Percheron
3097	G. W. Pearson	Ellsworth	Chelsea 41930	Percheron
3188	Dennis Murphy	Williams	Black Diamond 24314	Percheron
3198	Dennis Murphy	Williams	Beatem 40667	Percheron

HANCOCK COUNTY.

292	A. D. Paine	Kanawha	Amboy 26664	Percheron
238	Belgian Horse Co	Goodell	Coran de Taverne (18218)	Belgian
456	A. Chisek	Garner	Kilburn Prince 9539	Clydesdale
429	L. E. Faber	Miller	Dick Abbot 5331	Shire
641	J. N. Sprole	Garner	DeNavaro 12619	French Draft
785	P. R. Gilligan	Kanawha	Illinois Lad 24044	Percheron
1100	Britt Belgian Horse Co	Britt	Buffalo (16808)	Belgian
1131	Klemme Horse Co	Klemme	Styx (24964)	Belgian
1163	W. H. Greimann	Garner	Ajax 1061 (21446)	Belgian
1198	Ed Williams	Kanawha	Ganymede 1198	Clydesdale
1851	Nelson Peterson	Britt	Historian 45173 (59177)	Percheron
2482	Twin Lake Horse Co	Goodell	Flup 1789 (21832)	Belgian
2635	Klien Bros	Goodell	Veritable 27286 (48352)	Percheron
2755	Orthel Township Horse Co	Britt	Osprey II 22417	Percheron
2868	P. R. Gilligan	Kanawha	Clampin 22616 (42780)	Percheron
3047	Nels Pederson	Kanawha	Prince 42776	Percheron

HARDIN COUNTY.

337	C. H. Comly	Iowa Falls	Wyatt 4739	Morgan
354	Jos. Caillard	Iowa Falls	Paul 280	Belgian
667	J. T. Glenn	New Providence	Marengo 40159	Percheron
1120	W. A. McBride	Alden	Coad 41029	Percheron
1121	W. A. McBride	Alden	Pluton de Liroux (23044)	Belgian
1145	R. T. Hamilton	Iowa Falls	Moncey 44746 (51661)	Percheron
1426	Rezin Kennedy	Iowa Falls	Coxey 247	Oldenburg Coach
1454	E. H. LaTeer	Alden	Molay 13965 (19095)	Percheron
1455	E. H. LaTeer	Alden	William's Brilliant 30176	Percheron
1510	Wheeler & Turner	Iowa Falls	Rustachio 19803	Trotter
1618	D. D. Goodenough	Iowa Falls	Hartington 4237	Trotter
1733	Telko & Sietsema	Ackley	Royal S. 9008	Clydesdale

HARDIN COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1782	J. H. Bales	Eldora	Percy Woodside 41028	Percheron
2038	Seward Bros	New Providence	Modell 45589	Percheron
2149	Christ Risse	Hubbard	Keota Lion 7831	Shire
2254	Leo B. Marks	Eldora	Norve A. 0784	Trotter
2255	Leo B. Marks	Eldora	Goldfinder 9701 20320	French Draft & Percheron
712	J. T. Glenn	New Providence	Stuntney Joab 6617	Shire
2636	D. H. Faris	New Providence	Highland Berdell 43387	Percheron
2468	J. E. Bailey	Iowa Falls	Prince Albert 4725	Morgan
2470	J. T. Glenn	New Providence	Anthracite 47226	Percheron
2471	J. T. Glenn	New Providence	St. Ives II 8904 (10333)	Shire
2901	J. B. Fuller	Alden	Jo 41854 (63425)	Percheron
2994	G. F. Howard	New Providence	Sampson Jr. 42905	Percheron
3017	E. S. Ellsworth Estate	Iowa Falls	Lee Roy 45216	Percheron
3018	E. S. Ellsworth Estate	Iowa Falls	Ruvier 45552	Percheron
3078	Fred Gehrke	Alden	Mouron (25496)	Belgian
3098	O. J. Lacey	New Providence	Ussy 14858 (59254) P	French Draft
3096	W. L. Thornton	New Providence	Major L. 42429	Percheron
3095	Bales & Johnston	New Providence	Senator A. 42428	Percheron
3227	Samuel A. Tisher	Alden	Sam T. 41407	Trotter
3228	Samuel A. Tisher	Alden	Silver 9491 42112	French Draft & Percheron
3367	Anson Miller	Eldora	Willi 4273	German Coach
3362	Eclipse Horse Co	Ackley	Eclipse 35480	Percheron

HARRISON COUNTY.

531	A. C. Briggs	Missouri Valley	Ben Lawers 1542 (2594)	Clydesdale
532	Mo. Valley and Beebeetown Horse Co	Missouri Valley	Violent 2877	French Coach
533	Mo. Valley Percheron Horse Co	Missouri Valley	Arcachon 25050 (45461)	Percheron
534	Beebeetown Percheron Horse Co	Missouri Valley	Oiseau 31312 (48724)	Percheron
105	C. W. Reed	Woodbine	Mediumwood 19747	Trotter
148	Geo. W. Crewdson	Woodbine	Leo (23586)	Belgian
112	J. T. Smith	Woodbine	Victor 21809	Percheron
320	W. A. Smith	Woodbine	King L. 28814	Trotter
319	W. A. Smith	Woodbine	H. D. 40324	Trotter
291	D. W. Bennett	Woodbine	Mont-Joie de Ragnies (25572)	Belgian
467	Percheron Horse Horse Co	Woodbine	Email 31319 (46074)	Percheron
44	J. Knowles	Logan	Paltu 28352	Trotter
468	Coach Horse Co	Woodbine	Varreville 3284	French Coach
722	C. C. Booth	Little Sioux	Row On 33805	Trotter
814	P. C. McNally	Dunlap	Glenfinlass 35223	Trotter
1369	Cardinal Percheron Horse Co	Magnolia	Cardinal 24733 (43692)	Percheron
1530	Jas. H. Blackwood	Dunlap	Tronda's Chieftan 10291	Clydesdale
1550	W. D. & W. S. Howard	Logan	Stuntney King Edward 8414	Shire
1636	P. C. Stire	Logan	Loxley 40092	Trotter
1752	V. C. Atwell	Little Sioux	Instard 20494	Percheron
2493	F. A. Vore, keeper	Dunlap	Boulanger 24425 (43615)	Percheron
2514	Persia Percheron Horse Co	Persia	Cadix 25732 (43771)	Percheron
2662	Wm. L. Carr	Logan	Scott 7966	Shire
2842	Pherguson Bros	Dunlap	Fortune 41633	Percheron
3073	S. N. Dale	Logan	West Phallmont 43838	Trotter
3074	Harvey Dale	Logan	Delwood 43965	Trotter
3130	Pherguson Bros	Dunlap	Dax 2304 (30738)	Belgian

HENRY COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
328	Wm. H. Nugen	New London	Edward Bush 35987	Trotter
329	Wm. H. Nugen	New London	Quinton Cross 38154	Trotter
674	O. C. Newbold	Hillsboro	Portland 11901	Clydesdale
673	O. C. Newbold	Hillsboro	Iowa Jim 11903	Clydesdale
787	Dunham, Wright & P. J. Hanks	New London	Kalos 14439	French Draft
851	Ed C. Herron	Mt. Union	Heron de Vryheid 1293 (21346)	Belgian
955	F. W. Walters	New London	Prince Albert 11577	French Draft
899	C. C. Anderson	Mt. Pleasant	Alexander 7218	Shire
1040	Frank A. Bird	Mt. Pleasant	Harm Vandecar 30072	Trotter
1081	Maurice Green	Wayland	Arcturus 15798	Trotter
898	C. C. Anderson	Mt. Pleasant	Lord Commodore 8388	Shire
897	C. C. Anderson	Mt. Pleasant	Lord Gentry 8389	Shire
896	C. C. Anderson	Mt. Pleasant	Lord Claymont 7039	Shire
895	C. C. Anderson	Mt. Pleasant	Lord Curzon 7038	Shire
879	H. H. Hills	Mt. Pleasant	Cherreau 42473 (48488)	Percheron
1144	H. H. Hills	Mt. Pleasant	Lucky Cross 10861	Trotter
1143	H. H. Hills	Mt. Pleasant	Fortune Hunter 9202	French Draft
1142	H. H. Hills	Mt. Pleasant	Admiral 33035	Percheron
900	Swedesburg Horse Co	Swedesburg	Bernard 34307 (53267)	Percheron
1231	Jacob Beckley	Hillsboro	Wayside Smuggler 11857	Clydesdale
1232	Jacob Beckley	Hillsboro	Keota King 19437	Percheron
1226	J. J. O'Laughlin	Rome	Trevoux 12547	French Draft
1281	J. B. Jordan	Salem	Brown Wheeler 1281	Trotter
1322	Mr. Hamill Horse Co	Hillsboro	Damier 27119 (45993)	Percheron
1424	D. H. McCahan	Mt. Pleasant	Keota Prince 4965	Shire
1525	L. C. Wenger	Wayland	Superb 12507	French Draft
1526	Wenger Bros	Wayland	Fordy Duke 7584 (21432)	Shire
1670	Lee Ernst	Trenton	Nally 10010	French Draft
1817	Jacob Seploebam	Mt. Pleasant	Jerry 41599	Percheron
1828	C. M. Clark	Mt. Pleasant	Cecilian 17563	Trotter
1988	Dudolph & Walter Lund	Winfield	Winifred's Prince 12777	Clydesdale
2138	Ross S. Wright	Mt. Pleasant	Ambassaduer 43068	Percheron
2364	John Schadt	Rome	Keota Knight 8806	Clydesdale
2418	C. C. Anderson	Mt. Pleasant	Lord Roosevelt 8735	Shire
2516	Nelson Cornick	Mt. Pleasant	John 15033	French Draft
2522	Jesse D. Cooper	Winfield	Merriman 5376	Shire
2523	Jesse D. Cooper	Winfield	Javelot 23051 (43301)	Percheron
1788	Jesse D. Cooper	Winfield	Hannibal 41728	Percheron
2564	K. S. Mills	Mt. Pleasant	Gold Eagle 5301	Shire
2584	Wenger Bros	Wayland	Cyrano 50487 (45628)	Percheron
2416	John Shriver	New London	Creston Archie 3rd 6659	Shire
2954	C. C. Anderson	Mt. Pleasant	Novice 22614 (43366)	Percheron
2955	C. C. Anderson	Mt. Pleasant	Happy Tom 8012	Shire
2979	H. E. Watts	Salem	Agricole 41318	Percheron
3049	Wm. A. Harshbarger	Mt. Pleasant	Romeo 45175	Percheron
3161	W. P. Blackford	Hillsboro	Stuntney Sanrouge 840 (9033)	Hackney
3162	Jacob Beckley	Hillsboro	King 15626	French Draft
3234	New London Horse Co	New London	Tyrolien 2460	French Coach
3235	New London Horse Co	New London	Pomard 24489 (44564)	Percheron

HOWARD COUNTY.

398	P. J. Gesell	Elma	Bonton 9067	French draft
549	Protivin Percheron Horse Co	Protivin	Saumur 25031 (43633)	Percheron
138	Keune Horse Co	Cresco	Talmage 1069	Belgian
827	C. A. L. Loomis	Chester	Wildwoods Ideal 1530	Belgian
828	C. A. L. Loomis	Chester	Black 2221 (29464)	Belgian
997	F. A. Eckstein & Bro	Chester	Cyclone II 1375	Belgian
998	F. A. Eckstein & Bro	Chester	Macadam Jr. 1841	Belgian

HOWARD COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
999	F. A. Eckstein & Bro	Chester	Ideal Jr. 1840	Belgian
1000	F. A. Eckstein & Bro	Chester	Maxy 1802 (14698)	Belgian
1001	F. A. Eckstein & Bro	Chester	Macadam 718	Belgian
1371	Martin Jones	Cresco	Le Meniere (15409)	Percheron
1474	Maple Leaf Belgian Draft Horse Co	Elma	Paul Max (27498)	Belgian
1645	Clover Leaf Horse Co	Cresco	Epernon 34916 (46591)	Percheron
53	P. J. Herold	Cresco	Regale 2082	French Coach
2252	Albion Horse Co	Bonair	Buridan 27105 (48288)	Percheron
2258	T. J. Richards	Lime Spring	Barney Amber 10888	Clydesdale
2259	J. W. Davis & I. Roberts	Lime Spring	Nellie's Pride 11867	Clydesdale
2976	S. A. Converse	Cresco	The Governor 2976	Clydesdale
2977	S. A. Converse	Cresco	Prince James 8932	Clydesdale
3013	Geo. Moore	Elma	Trompeur 31248 (48679)	Percheron
3055	Saratoga Horse Co	Cresco	Libaros 27378 (44843)	Percheron

HUMBOLDT COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
215	Bradgate Horse Co	Bradgate	Raithby Tommy 6853 (19043)	Shire
169	R. W. Taylor	Bode	Sampson 7853	Shire
90	Brown Bros. & Beck	Humboldt	Cokeril 1800 (29592)	Belgian
290	Harry Bratton	Ottosen	Captain Hopetown 11442	Clydesdale
1067	B. G. Olson	Humboldt	General Sherman 27897	Percheron
1189	Rutland Horse Co	Rutland	Pollux II 1371 (18216)	Belgian
1435	Moen & Anderson	Humboldt	Guepin 27159 (44716)	Percheron
1744	Boone Percheron Horse Co	Renwick	Reflescible 41866 (48870)	Percheron
2359	Brown Bros. & Beck	Humboldt	Major de Corroy 2533 (24426)	Percheron
2360	Brown Bros. & Beck	Humboldt	Corail 14861 (62679) P	French draft
2433	P. L. DeSmidt	Humboldt	Romance 26395	Percheron
2628	L. E. Dolder	Pioneer	Thomas 34371 (46441)	Percheron
2664	Peter Capesins	Ottosen	Brock 1037 (Vol. 11)	Belgian
2833	Renwick Shire Horse Co	Renwick	Stuntney Defiance 2853	Shire
2938	Byron Brink	Renwick	Bob Sheldon 38354	Trotter
3146	A. J. Hayden	Humboldt	LaPerche 45327	Percheron
3145	A. J. Hayden	Humboldt	King Unique 43164	Percheron

IDA COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
95	E. F. Peffer	Battle Creek	Me Lud Conkling 34924	Trotter
129	Anton Grones	Holstein	Andree 1159	German Coach
130	Holstein Horse Co	Holstein	Vernis 30421 (46609)	Percheron
167	J. F. Parks	Arthur	Nigrier 44625	Percheron
35	Elmer C. Somers	Ida Grove	Brynes 25936	Trotter
45	J. Y. Crawford	Ida Grove	Creston Prince 35728 10667	Percheron French Draft
51	John Crawford	Holstein	Napoleon II 273	Belgian
52	John Crawford	Holstein	Marron De Vissoul 1350 (24818)	Belgian
23	Geo. H. Nailer	Battle Creek	Harry 9378	French draft
26	V. D. Wolcott	Battle Creek	Ibrahine 11520	French draft
27	V. D. Wolcott	Battle Creek	Du Chaillu 11199	Trotter
83	Arthur Horse Co	Arthur	Fondant 40141	Percheron
1353	Elmer C. Somers	Ida Grove	El Somero 0754	Trotter
1481	P. McGuire	Holstein	Duke 43554	Percheron

IDA COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1482	P. McGuire	Holstein	Cinchona 20391	Percheron
1483	P. McGuire	Holstein	T. R. K. 11837	Trotter
1484	P. McGuire	Holstein	Romeo 23495	Percheron
1485	P. McGuire	Holstein	Sweet King 40977	Trotter
1727	Waldo & Ray Clapsaddle	Galva	Alex of Odebolt 11754	Clydesdale
928	Ida Grove Horse Co	Ida Grove	Danton 1020	Belgian
1731	B. M. Hester	Ida Grove	Black Prince 4324	Shetland
2024	H. P. Rice	Holstein	Monaco 14100	French draft
2087	Galva Union Horse Co	Galva	Pianiste 44474 (58181)	Percheron
2088	Galva Horse Co	Galva	Sasie 46060 (51718)	Percheron
2338	C. A. Shimerda	Battle Creek	Ringmaster Jr. 8417	Shire
2583	F. O. Peterson	Galva	Money Maker 7874	Shire
2589	Andrew White	Ida Grove	Wenona Swell 22991	Percheron
2776	Galva Shire Horse Co	Galva	Blaisdon Victor 7110 (20267)	Shire
3247	John H. Brunjes	Arthur	Gamway 45286	Trotter

IOWA COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
125	Draft Horse Co. of Ladora	Ladora	Robert de Lillo (25508)	Belgian
126	Draft Horse Co. of Ladora	Ladora	Caesar de Wodecg (29436)	Belgian
127	Draft Horse Co. of Ladora	Ladora	Keota Edward 29654	Percheron
239	W. V. Hixson	Marengo	Rosemack 10406	Trotter
778	Chas. Boland	Williamsburg	Kerzerah 33729	Percheron
867	W. V. Hixson	Marengo	Mac Delightful 10759	Clydesdale
865	W. V. Hixson	Marengo	Palmerston 9728	Clydesdale
864	W. V. Hixson	Marengo	Mac Delightful 2nd 11314	Clydesdale
973	Henry Wiedemeier	Millersburg	Bon Roister 6065 (17790)	Shire
1028	Millersburg Coach Horse Co	Millersburg	Eithon 2085	French Coach
1008	Williamsburg Draft Horse Co.	Williamsburg	Baron Balantyre 9343 (10497)	Clydesdale
1009	Williamsburg Draft Horse Co.	Williamsburg	Piston 829 (13000)	Belgian
871	Samuel E. Harper	Victor	Scott Gamaleon 31292	Trotter
1384	R. M. Wyant	Millersburg	Jay Field's Hasty 36018	Trotter
1405	J. F. Talbot	Williamsburg	Keota Ranford 29656	Percheron
1402	Francis E. Grim	North English	Dewey 5203	Shire
1450	Jacob E. Cox	Williamsburg	Boum 44470 (55162)	Percheron
1451	Jacob E. Cox	Williamsburg	Devinez (57137)	Percheron
1479	John B. Wyant	Marengo	Dandy E. 0847	Trotter
1518	W. H. Spratt	Parnell	Oambushinnie Prince Jr. 10861	Clydesdale
1519	W. H. Spratt	Parnell	Manor Surprise (16800)	Shire
1552	J. H. Schrader	Marengo	Gables Shamrock 6959 (Vol. 25)	Shire
2106	H. F. Lohman	Millersburg	Bayard X 30585 (48326)	Percheron
2509	W. E. Reynolds	Williamsburg	Flashwood 8066	Shire
2601	Koszta Horse Co	Kozsta	Tresor (55352)	Percheron
2204	Ladora Draft Horse Co	Ladora	Caesar de Merchtem 2588 (36802)	Belgian
2653	Jonas Mantz	Williamsburg	Darius 44456 (51256)	Percheron
2654	Jonas Mantz	Williamsburg	Rival 26903 (45850)	Percheron
2675	A. J. Clark	Ladora	Scipion 41554 (63657)	Percheron
2688	Williamsburg Draft Horse Co	Williamsburg	Negrillon II 15466	French Draft
2689	Williamsburg Draft Horse Co	Williamsburg	Bobby B. 15467	French Draft
2546	G. M. Ocheltree	Victor	Colonel O. 13297	French Draft
2731	Frank X. Conroy	Conroy	Joe Menary 43156	Trotter
2787	W. V. Hixson	Marengo	Baron Clifton 12611	Clydesdale
2788	W. V. Hixson	Marengo	Dale 12333	Clydesdale
2789	W. V. Hixson	Marengo	Glenco 13334	Clydesdale
2790	W. V. Hixson	Marengo	Sefton 12331	Clydesdale

IOWA COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2883	J. P. Gunzenhauser	Williamsburg	Paul 19422	Percheron
2882	J. P. Gunzenhauser	Williamsburg	Julo 2151 (Vol. 12)	Belgian
2752	E. F. McArtor	North English	Nelson 1785	German Coach
1169	Roylander Horse Co	North English	Roylander 30695	Trotter
2998	Ross J. Miller	North English	Printannier 28744 (47059)	Percheron
3032	Jonas Mantz	Williamsburg	Lord William II 5415	Shire
3057	J. D. Thomas	North English	Patwood 34296	Trotter
3221	A. J. Clark	Ladora	Zoo Zoo B. 36336	Trotter

JACKSON COUNTY.

374	Chris Boden, Jr.	Green Island	Foxie 20868	Percheron
375	Comte Percheron Horse Co	Bellevue	Comte (46493)	Percheron
347	Chris Peterson	Miles	Lapin 30198 (46857)	Percheron
268	D. H. Anderson	Maquoketa	Cyclone 1852	Belgian
267	D. H. Anderson	Maquoketa	Brilliant III 1347	Belgian
260	D. H. Anderson	Maquoketa	Vonmore 22417	Trotter
265	C. D. Krepps & D. H. Anderson	Maquoketa	Woodford Russell 37964	Trotter
251	Cook & Depue	Miles	Coco 11360	French Draft
250	Miles Belgian Horse Co	Miles	Blanqui de Mellemont (29368)	Belgian
285	Belgian Horse Co	Bellevue	Bornival 1403 (19204)	Belgian
6	Ely & Robinson	Maquoketa	Monteleone 29178	Trotter
496	John Orr, Sec'y	Maquoketa	Romeo 23077	Percheron
644	Wm. Dunn	Bellevue	Beaudole III 33407 (47831)	Percheron
415	J. C. Dennison	Bellevue	Paralene 35112	Trotter
414	J. C. Dennison	Bellevue	Patrolist 40307	Trotter
783	Wm. F. Meinke	Maquoketa	Ardea 42216	Percheron
1092	J. F. Kunan	Sabula	Sans-Gradin 24731 (44668)	Belgian
1128	J. L. Ripple & W. W. Mayberry	Bellevue	Fenelon 25807	Percheron
1116	Roach Bros	Preston	Patalma 37916	Trotter
1339	J. L. Hoffman	Lamotte	Bernard (13100)	Belgian
1527	Ed Farley	Preston	Clarion de Loyers 2174 (25506)	Belgian
1313	Wm. Schmadke	Preston	Nogeant II 25422	Percheron
1599	Jos. Eberle	Spragueville	Grove Paragon 2216 (7334)	Shire
2508	Sabula Belgian Horse Co	Sabula	Coquet de Mellemont 2345 (Vol. 13)	Belgian
2606	Jno. & George Goepfert	Bellevue	Sir Bolivar 12535	Clydesdale
2716	Lamotte & Swingle Horse Co	Lamotte	Miramar 31274 (48168)	Percheron
2860	Jerry Broderson	Maquoketa	Champagne 27439 (43154)	Percheron
3110	Geo. S. Flathers	Maquoketa	Dr. Kendall 22713	Trotter
3236	Fred Kelsall	Iron Hills	Bonaparte 19764 (43112)	Percheron

JASPER COUNTY.

99	James McKenzie	Baxter	Sandy McNab 11211	Clydesdale
341	Newburg Horse Imp. Co	Newburg	Avril 31348 (46164)	Percheron
352	Lavelleur & Zachary	Prairie City	Aristote 44302 (55655)	Percheron
377	Oscar Wallick	Monroe	Keota Senator 9614	Clydesdale
473	M. C. Cramer	Monroe	Dewey 9634	French Draft
56	J. M. Furney	Prairie City	Rex 25630	Percheron
554	David A. Moffet	Prairie City	Robert 2098	French Coach
476	J. W. Munn	Newton	Prince Lucas 14363	Percheron
854	Frank Bruner	Prairie City	Keota-Gallipoli 33459	Percheron

JASPER COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
807	C. S. Mershon	Newton	Baladin 29429 (46958)	Percheron
1267	D. C. Gifford Est	Prairie City	Pompee 27986 (46835)	Percheron
1268	D. C. Gifford Est	Prairie City	Dardaghan II 13181	French Draft
1555	Robert Roush	Monroe	Oberlin 19549	Percheron
995	J. P. Taylor	Sully	Twister 20753	Trotter
996	J. P. Taylor	Sully	Twis G. B. 996	Trotter
1745	I. Coffee	Kellogg	Valeur 768	French Coach
2167	J. J. Whisler	Fairmont	Regal Marconi 39287	Trotter
2189	Eldredge Bros	Sully	Garnet Wilkes Jr. 43307	Trotter
2324	Chas. Goeke	Baxter	Newton Harold 7649	Shire
2410	M. C. Cramer	Monroe	Arnold M. 15669	Trotter
2411	M. C. Cramer	Monroe	Matchfield Jr. 12634	Clydesdale
2459	Gibson West	Baxter	Seducteur 47205	Percheron
2458	Gibson West	Baxter	Victor 47206	Percheron
2457	Gibson West	Baxter	Wilhelm 23608	Percheron
389	A. D. Gipson & G. C. Butler	Baxter	Lapon 26724 (48351)	Percheron
956	Lavalleur & Taylor	Colfax	Monarch 13475	French Draft
132	A. E. Starrett	Kellogg	Bailly 26932 (45965)	Percheron
2933	L. N. Mateer	Monroe	Arbitrator 47769	Percheron
2962	D. A. Moffet	Prairie City	Stanislas 15155 (62729)	French Draft
3061	Livingston Bros	Monroe	Raymond 41181	Percheron
3179	H. W. Klopping	Newton	Gutemburg 41765 (60923)	Percheron
3180	Crawford & Griffin	Newton	Prosit 2568 (Vol. 13, p. 737)	Belgian
3202	Johnson & Kingdon	Prairie City	King William 12782	French Draft
3203	Johnson & Kingdon	Prairie City	Motus (56933)	Percheron
3204	Johnson & Kingdon	Prairie City	Newton Victor 6921	Shire
3222	Louie J. Altemeir	Newton	Wenona King 5260	Shire
3376	Margaret Gates	Newton	Newton King 40723	Trotter
3377	Margaret Gates	Newton	Scott W. Jr. 45377	Trotter

JEFFERSON COUNTY.

277	E. E. Myers	Packwood	Kilted Lad 3rd 10353	Clydesdale
278	E. E. Myers	Packwood	Sully's Jim 44488	Percheron
279	E. E. Myers	Packwood	Reno 12483	French Draft
453	Harlan B. Macy	Pleasant Plain	Maceo 19881	Percheron
638	Batavia Belgian Draft Horse Co.	County Line	Duc II De Montfort	Belgian
742	Dr. J. V. Bean	Fairfield	Nebator 37751	Trotter
743	Dr. J. V. Bean	Fairfield	Sphinxceps 40238	Trotter
837	Libertyville Horse Co	Libertyville	Abner 24261 (44604)	Percheron
901	F. K. Laughlin	Batavia	Governor 6199	Shire
966	John Larson	Fairfield	Junius of Fairfield 38063	Trotter
968	John Larson	Fairfield	Fairfield Short Legs 7262	Shire
967	John Larson	Fairfield	Fairfield Brother Bill 7832	Shire
969	John Larson	Fairfield	Fairfield Bumper 8332	Shire
970	O. W. Green	Fairfield	Merry Tom 6248	Shire
971	Larson Shire Horse Co	Fairfield	New Cut President	Shire
1003	Daniel G. Dana	Fairfield	Judge Marshall 25791	Trotter
1220	E. P. Taylor	Fairfield	Romeo 35582	Percheron
1239	J. Lewis McCleary	Libertyville	Leonard 14677	French Draft
1221	E. P. Taylor	Fairfield	Laurent 19126	Percheron
1337	Chas. Stevenson	Veo	Keota Chilicoot 21662	Percheron
1438	Wm. Case & Co.	Fairfield	Capricieux 1438	Percheron
1546	J. V. Bean	Fairfield	Bashneermont 5193	Morgan
1622	Sylvester Hadley	Packwood	Marquise 13702	French Draft
1654	Wm. Carmichael	Fairfield	Fred Bee 38946	Trotter
1658	Jas. Carmichael	Fairfield	R. D. Rex 37722	Trotter
1691	J. P. Campbell	Libertyville	Taupin 9022	French Draft
1692	J. P. Campbell	Libertyville	Le Roy 13007	French Draft
1728	Alex Hopkirk	Lockridge	Mark Dupont 10771	French Draft

JEFFERSON COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1808	J. E. Harris	Batavia	Ellerslie of Fairfield 38065	Trotter
1809	J. E. Harris	Batavia	Verjus 13635 (22666P)	French Draft
1810	J. E. Harris	Batavia	Thumper 15014	French Draft
1842	O. W. Green	Fairfield	Favori 50644 (57174)	Percheron
1843	John Larson	Fairfield	Fordy Spark 8446 (23320)	Shire
1994	J. F. Carlson	Lockridge	Monte Marshall 44104	Trotter
2025	John Larson	Fairfield	Admiral Togo II 8445 (22990)	Shire
2026	Julius Crile	Brighton	Champagne 41562 (52403)	Percheron
2243	J. E. Huffman	Abingdon	Prince Archer 11397	Clydesdale
2427	C. W. Benn	Packwood	Packwood Boy 43791	Trotter
2428	C. W. Benn	Packwood	Wm. Packwood 43834	Trotter
2429	C. W. Benn	Packwood	Dr. Clark 44925	Trotter
2430	C. W. Benn	Packwood	Romulus 22674 (43371)	Percheron
2431	C. W. Benn	Packwood	Paul 40400 (45371)	Percheron
2432	C. W. Benn	Packwood	Skirbeck Squire 630	Shire
2509	E. R. Smith	Fairfield	Parker 2379	Trotter
2504	J. W. Wilson	Fairfield	Sansonnet 12038 (44364)	French Draft
2505	J. W. Wilson	Fairfield	Octavian 6337 (18994)	Shire
2506	J. W. Wilson	Fairfield	J. W. B. 32333	Trotter
2507	Jerry Bates	Fairfield	Jerry May 41239	Trotter
2602	James M. Blakeley	Fairfield	Charles Byron 41480	Trotter
2603	James M. Blakeley	Fairfield	Charleston Jr. 22122	Trotter
2365	J. S. Herald	Fairfield	Latimer 10024	French Draft
2366	J. S. Herald	Fairfield	Matehless 9998	French Draft
2691	Humphrey Bros	Pleasant Plain	Solide 41713 (46710) 15545	Percheron
2723	Maasdam & Wheeler	Fairfield	Keota Hymen 31887	Percheron
2878	Jno. F. Axelson	Fairfield	Jumbo 27767	Percheron
2988	Walton Bros	Pleasant Plain	King of Perche II 2988	French Draft
2997	W. C. Estes & Co	Packwood	Vulcain 40705 (58882)	Percheron
3009	Nady Bros	Fairfield	Pyrrhus II 42015	Percheron
3010	Nady Bros	Fairfield	Lafayette 42014	Percheron
3028	Blogh Bros	Fairfield	Coquin 14007 (54840) P	French Draft
3029	Blogh Bros	Fairfield	Artiste 45792 (64460)	Percheron
3076	D. B. Hedge	Fairfield	King 13097	Clydesdale
3139	W. C. Estes & E. A. Heald	Packwood	Fiston De Libenne 2105 (Vol. 12, p. 434)	Belgian
3138	W. C. Estes	Packwood	Oscanion 1532	Belgian
3011	A. D. Reed	Fairfield	Favorite 42011	Percheron
3226	J. L. McCleary	Libertyville	Dewey 15652	French Draft

JOHNSON COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
505	G. H. Miller	Iowa City	Dewey 26113 (44243)	Percheron
504	G. H. Miller	Iowa City	Westwulf 6827	Shire
106	F. J. Cochran	Iowa City	Del Chimarch 34572	Trotter
180	Jno. Kelley	Oxford	Avignon 26078 (45016)	Percheron
312	R. E. Jones	Iowa City	Marius 9871 (9678)	Percheron
313	R. E. Jones	Iowa City	Queen's King 23685	Percheron
623	W. F. Lutz	Lone Tree	Conde 11204 16709 (34482)	French Draft Percheron
1090	G. L. Falk	Iowa City	Star Denmark (Falks) 2905	Saddle Horse
1070	Frank J. Pudil	Swisher	Caesar 25132 (45449)	Percheron
1314	Whittington & Ulch	Solon	Chieftain Harold 5702 (17251)	Shire
1346	C. E. Colony, Jr.	Iowa City	Joker 25007 (44963)	Percheron
1483	C. S. Lucas	Iowa City	Larry Ginter 31998	Trotter
1634	A. E. Barnes	Iowa City	Picador Jr. 11066	French Draft
1749	Brennan Bros	Solon	Canari 1422 (25262)	Belgian
1697	John Eden	Lone Tree	Brutus (243)	French Draft
1748	Brennan Bros	Solon	All Black 8293 (23886)	Shire
1720	Jas. Rodgers	Oxford	Phenix 19100	Percheron
2352	Scott Wilson	Iowa City	Lightfoot of Fairfield 36408	Trotter

JOHNSON COUNTY—Continued.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2354	L. P. Kessler	Iowa City	Keota Superior 9328	Percheron
2355	L. P. Kessler	Iowa City	Victor K. 43665	Percheron
2356	L. P. Kessler	Iowa City	Coledge K. 43666	Percheron
2707	Lue Rohret	Oxford	Nig 33231	Percheron
2090	Lue Rohret	Oxford	Goodenough 34367	Percheron
2810	W. H. Bailey	Iowa City	Marshall Ney 14270	French Draft
1099	W. H. Bailey	Iowa City	Trojus Jr. 12654	French Draft
2915	Lutz & Co	Lone Tree	Chili 46191 (58076)	Percheron
783	W. H. Bailey	Iowa City	Logan 13311 23717	French Draft
3100	L. W. Harding	Solon	Aegon Proctor 01031	Trotter
3108	Martin, Berkey & Son	Iowa City	Bayard De Claquebois 944 (13900)	Belgian
3107	Martin Berkey & Son	Iowa City	Cahmporeau 32303 (43538)	Percheron
3113	Bert Bell	Iowa City	John the Fifth 0725	Trotter
3206	R. C. Zeller	North Liberty	Colonel 50042	Percheron
3122	The Belgian Horse Co. of Iowa City	Iowa City	Bijou De Bassine 1625 (24882)	Belgian
3207	R. C. Zeller	North Liberty	Comme Vous 46603 (63523)	Percheron

JONES COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
12	P. H. Connor	Monticello	Al Platoe 38896	Trotter
950	Fred Heltz	Anamosa	Pictor Drayman 6073	Shire
990	G. H. Bohlken	Monticello	Prince of Quality 10840	Clydesdale
989	G. H. Bohlken	Monticello	Prince Royal 12304	Clydesdale
1043	P. L. Smith	Olin	Marcos B. 41312	Trotter
1154	Geo. B. Colton	Anamosa	Brilliant 32842	Percheron
1238	L. H. Chipman	Anamosa	Titus 1317 (25306)	Belgian
1551	G. F. Faragher	Anamosa	Barney's Prince 10851	Clydesdale
1566	A. J. Beem	Anamosa	Cosaque de Tilly (Vol. 11, page 439)	Belgian
1585	C. A. Schwab	Oxford Junction	Romeo 11988	French Draft
1584	Onslow Shire Horse Co	Wyoming	Black Dragon 5583	Shire
1732	Arthur L. Fairbanks	Monticello	Hercules 32843	Percheron
1784	G. W. Loehr	Anamosa	Dewey 9688	French Draft
1825	G. H. George	Monticello	Marcos Bozzaris 30856	Trotter
1824	G. H. George	Monticello	Substantial 8990	Clydesdale
2633	Monticello Percheron Horse Co	Monticello	Escargot 23224 (43471)	Percheron
2634	J. A. Howie	Monticello	Royal Jap 11849	Clydesdale
2554	Geo. Oltmans	Scotch Grove	George Junior 40424	Trotter
2840	S. E. Ireland	Anamosa	Ogle Swigert 20771	Trotter
2924	Jas. E. Kegley	Wyoming	Reveil 2083	French Coach
2944	H. H. Peck	Wyoming	Lunesdale Matchless 6773 (19803)	Shire
3298	C. E. Bottomstone	Wyoming	Young Roosevelt 11081	Clydesdale
3294	B. L. Hoyt	Scotch Grove	Tipster 35574	Trotter
3306	Larkey & Shimerda	Wyoming	Robert de Glatignes 2046 (19310)	Belgian

KEOKUK COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
585	Clayton Messenger	Keswick	Bebe Sarreguemine 10120	Clydesdale
620	O. O. Phelps & Geo. Sauer	Hedrick	Magnus of Montomore 7657	Shire
916	Michael Schwartz	What Cheer	Alma Samson 5402 (16485)	Shire
911	F. R. Feltz	Keota	Limoges 13661	French Draft
912	F. R. Feltz	Keota	Wilkie Wilson 35737	Trotter
1579	Wm. Cox	Kinross	Idleton 29618	Trotter

KEOKUK COTNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1448	A. L. McClenahan	What Cheer	Keota Chief 5427	Shire
1447	A. L. McClenahan	What Cheer	Gables Monarch 6958 (Vol. 25)	Shire
1449	A. L. McClenahan	What Cheer	Malaga 27852 (44336)	Percheron
1515	Chas. Santee	What Cheer	Capitain 193	German Coach
1590	J. C. Ulin	Delta [illegible]	Tirelarigot 13039 (57124)	Percheron French Draft
1591	J. C. Ulin	Delta	Postillon 13743 (53841)	French Draft Percheron
1608	L. G. Garrett	What Cheer	Toreador 1608	Shire
1612	M. P. Frazier	Richland	Keota Jacob 7789	Shire
1677	Keswick Draft Horse Co	Keswick	Barnfields Lord 6932 (20226)	Percheron
1678	Delta Draft Horse Co. No. 2	Delta	Revolver 22648 (43596)	Percheron
1683	R. H. Schultz	Hedrick	Demon III 25795	Percheron
1729	Corban Utterback	Sigourney	Black Chief 21483	Percheron
1730	Corban Utterback	Sigourney	Sombrun 24283 (43610)	Percheron
1773	W. T. Fancher	South English	Keota Count 1946	Percheron
1772	W. T. Fancher	South English	Fred E. White 33368	Trotter
1775	Jno. Smith No. 1	Harper	Keota Victor 4639	Shire
1776	Jno. Smith No. 1	Harper	Buchman II 6596 (Vol. 24)	Shire
1797	M. L. Smithart & Richmond Bros.	Sigourney	Vulcain d'Essche 2422 (29602)	Belgian
2108	J. F. Priest	Sigourney	Canonier 44747 (57041)	Percheron
718	A. Hall	Keswick	Nobby Allerton 31441	Trotter
2133	Keiser Bros	Keota	Lawson 11919	Clydesdale
2344	F. M. Fixmer	Harper	Bellero 44304	Trotter
2345	F. M. Fixmer	Harper	Rabelais 22626 (43468)	Percheron
2346	F. M. Fixmer	Harper	Victor of Elm Park 11712	Clydesdale
1565	Dwight Beman & J. H. McNabb	Delta	Clifford 14287	French Draft
2351	J. E. Wolf & Sons	Hedrick	Major Hope 8413	Clydesdale
2398	R. H. Schultz	Hedrick	Ali 41511 (60307)	Percheron
2399	R. H. Schultz	Hedrick	Piedro 14631	French Draft
2486	A. L. McClenahan	What Cheer	Falcan 43495	Trotter
2495	M. P. Frazier	Richland	Danseur 46192 (59117)	Percheron
2496	M. P. Frazier	Richland	Ramoneur 44450 (52112)	Percheron
2510	J. T. Morton	Thornburg	Sangrador 12373 (51977)	French Draft
2614	J. A. Legg	Sigourney	Tom O'Rourke 13109	Clydesdale
2624	Dwight Beman & J. H. McNabb	Delta	Scott 12288	French Draft
2646	Martin Moland	Richland	Keota Mohland 44759	Percheron
2647	A. J. Ramsey	Richland	Keota Commodore 7089	Clydesdale
2448	Pierce Halferty	Keswick	Jupiter 8880	French Draft
2742	Victor Vercheval	Harper	Docteur 3968	French Coach
2743	Victor Vercheval	Harper	Regent 27845 (43562)	Percheron
2744	Victor Vercheval	Harper	Mouton IV 1231 (21722)	Belgian
910	Victor Vercheval	Harper	Lisieux 13622	French Draft
2746	D. G. Clyde	South English	Hurbert 29024P 14214FB	French Draft Percheron
2747	D. G. Clyde	South English	Gabels Startling 7122 (Vol. 25)	Shire
2748	D. G. Clyde	South English	Keota Cummins 6191	Shire
2749	D. G. Clyde	South English	Garibaldi 15536 32304 (44600)	French Draft Percheron
2814	Frank Snakenberg	Delta	Pattelin 25444 (45401)	Percheron
1764	J. F. Barton & W. W. Wilson	What Cheer	Charley Clifton 36819	Trotter
2916	W. A. Seaba	Sigourney	Rossignol 24273 (44330)	Percheron
2964	Roy Patterson	Ollie	Curet 41193	Percheron
2999	Samuel Singleton	Richland	Monet 13701 (42482) P	French Draft
3000	Samuel Singleton	Richland	Victor Noir 14506	French Draft
3021	Jno. Smith No. 1	Harper	Dunsby Menestrel 8869 (22304)	Shire
3103	Edward Blattner	Sigourney	Keota Corette 3103	Percheron
3167	W. R. McClune	Keswick	Bluecoat 9043 (18532)	Shire
3182	J. T. Morton	Thornburg	Aubepin 7019 (8383)	Percheron

KOSSUTH COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
97	Hinderk Beenken	Germania	Romio 24088	Percheron
300	Frank Froehle	Bancroft	Corneillo (29508)	Belgian
91	James Britt	Algona	Wenona Tom 22562	Percheron
660	Burt Shire Horse Co	Burt	Pride of the West 7285	Shire
741	M. B. Bratt & Mann & Powers	Burt	Bon Coeur 23073 (43207)	Percheron
782	James Pedley	Algona	Prince Climax 9807	Clydesdale
830	Jerry Helgens	Burt	General Grant 13332	French Draft
991	Ledyard Belgian Horse Co	Ledyard	Charmeur De Dompire (20868)	Belgian
1190	Black Bros	Algona	John Doe 7790	Clydesdale
1304	E. H. Staley	Burt	Hugo Hercules 7477	Shire
1352	T. R. Hanifan	Swea City	Jongleur 948	French Coach
1393	H. P. Rasmussen	Galbraith	Le Roy 11262	French Draft
1471	Lone Rock Horse Breeding Ass'n	Lone Rock	Orleans (25132)	Belgian
1505	C. B. Albright	Algona	King George 5783	Shire
1548	H. G. Wright	Algona	Landsut 1047	French Coach
1726	Swea City Horse Co	Swea City	Neron 22503 (42858)	Percheron
2102	Belgian Horse Breeders' Ass'n	Whittemore	Beau-Type 1360 (21624)	Belgian
2181	Sam'l Gross & Sons	Titonka	Usedom 8801	German Coach
2213	Akbar Stallion Co	St. Benedict	Akbar 22893 (43600)	Percheron
184	W. H. Strickler	Algona	Vic 31915	Trotter
2393	Sparks Bros	Algona	Era 8680 (20468)	Shire
819	Leonard M. Hart	Sexton	Judge Artus 30008	Trotter
2288	Sam'l Gross & Sons	Titonka	King Gerome 25543	Percheron
2557	Sandscale Victor Horse Co	Bancroft	Sandscale Victor 5636 (17593)	Shire
2683	E. E. & W. R. Schweitert	Burt	Tom Patch 12439	Clydesdale
2462	Irvington Horse Co	Irvington	Jeun Brin D'Or 1014 (15232)	Belgian
2710	Sparks Bros	Algona	Sovereign 48089	Percheron
2727	Whitcomb Ball & Son	Titonka	Provost 5323	Shire
2795	H. A. Paine	Algona	Peter the Great 20321	Percheron
2802	Knutson & Nelson	Swea City	Bambin 18270	Percheron
2819	L. N. Larson	Algona	Major Woodford 42853	Trotter
1785	Albert Reutter	Lone Rock	Arabe 17974 (39208)	Percheron
3027	Hobart Horse Co	Algona	Manor Society 6826 (19815)	Shire
3064	Geo. A. Stoke	Swea City	Souance 21282	Percheron
3079	A. W. Young	Burt	St. Laurent 10373	French Draft
3144	George Beard	Burt	Stanislas 22881 (43502)	Percheron
3393	C. G. Dourte	Swea City	Stuntney Upstart 1753 (10576)	Shire

LEE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
540	C. G. Cline	Fort Madison	Pilmore 35374	Trotter
539	C. G. Cline	Fort Madison	George Green 30700	Trotter
591	Sam'l Glendening	Mount Hamill	Wilton Prince 17745	Percheron
448	W. G. Willard	Fort Madison	Gladiator 43541	Percheron
1445	Fort Madison Percheron Horse Co	Fort Madison	Confrere 31108 (45929)	Percheron
1540	J. Klopfenstein	West Point	Bellair 31786	Percheron
2193	R. Klinger	Donnellson	Joyeux 25302 (43677)	Percheron
2180	R. Klinger	Donnellson	White Stripe 11496	French Draft
2347	Seth Cook	Mount Hamill	Prospect W. 39138	Trotter
2348	Seth Cook	Mount Hamill	Sirius 17550	Trotter
2945	W. E. Brown & Son	Fort Madison	Dedini 40425 (55357)	Percheron
2946	W. E. Brown & Son	Fort Madison	Riflard 41025 (54926)	Percheron

LINN COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
512	W. J. Henderson	Central City	Mahomet King 7272	Shire
543	S. J. Hagerman & J. A. Abbott	Center Point	Keota Standard 27698	Percheron
511	W. J. Henderson	Central City	Brown William 5721 (17208)	Shire
480	P. C. Boyd	Toddville	Pouliard (24476)	Belgian
544	S. J. Hagerman & J. A. Abbott	Center Point	Dick Rogers 6398	Shire
450	R. L. Minor	Marion	Edison 5078	Shire
451	C. Fisher	Central City	Sulphume 31665	Trotter
436	W. D. Foreman	Coggon	Quality 5190	Clydesdale
446	A. Kinsey	Cedar Rapids	Blythe Ben 6843	Shire
430	David G. McLennan	Marion	Volontaire 27859 (45210)	Percheron
509	Troy Mills Percheron Horse Co	Walker	Gambetta 22696 (42728)	Percheron
687	Jno. A. Dunn	Central City	Hercules 4166	Morgan
695	W. G. Coppock	Whittier	Colonel Russell 6490	Shire
711	Joe Kvetensky & Jno. Kaplan	Fairfax	Keota-Talbert 33452	Percheron
717	J. S. Kitterman	Center Point	John Hale 32953	Trotter
840	Frank Graver & J. A. Van Fossen	Lisbon	Gabels Thumper 5387 (17357)	Shire
830	Frank Graver & J. A. Van Fossen	Lisbon	St. Blaze 11642	French Draft
880	Walker Draft Horse Co	Walker	Rameur 22900 (41803)	Percheron
1134	West Prairie Percheron Horse Co	Central City	Sofferino 40147 (43776)	Percheron
1167	Dell Andrews	Central City	Great Scott 10347	Clydesdale
1171	J. W. Osborn	Walker	Pomard 1457 (25408)	Belgian
1254	Cedar Rapids Belgian Horse Co	Palo	Pirate II 1272 (27620)	Belgian
1357	G. C. Murphy	Walker	Cupid 1357	Percheron
1467	Carl Moore	Central City	Tagus (25504)	Belgian
724	Hiland Horse Co.	Walker	Pantin 29907 (46885)	Percheron
1559	H. M. Shanklin	Waubeek	Huit 2038 (29290)	Belgian
1563	N. D. Harrold	Cedar Rapids	Jacqueminot 40602	Trotter
1674	Palo Draft Horse Co	Palo	Negus 30580 (45360)	Percheron
1686	Bohemian Belgian Draft Horse Co	Cedar Rapids	Don Carlos (14982)	Belgian
1705	Wolfe Bros. & Gamble	Mount Vernon	Elgin 27025	Percheron
1771	James Thompson	Bertram	Artemus 8593	Clydesdale
2083	W. L. DeClow	Cedar Rapids	Mirabeau 41037 (57698)	Percheron
2082	W. L. DeClow	Cedar Rapids	Botha II 2283 (Vol. 13, p. 327)	Belgian
2080	W. L. DeClow	Cedar Rapids	Ami de Givry 2281 (Vol. 13, p. 847)	Belgian
2079	W. L. DeClow	Cedar Rapids	Caesar de Sagelsem 2885 (Vol. 13, p. 624)	Belgian
2078	W. L. DeClow	Cedar Rapids	Garibaldi 2286 (Vol. 14, p. 347)	Belgian
2077	W. L. DeClow	Cedar Rapids	Hercule d'Oost 2287 (37386)	Belgian
2076	W. L. DeClow	Cedar Rapids	Minos 2290 (Vol. 13, p. 327)	Belgian
2075	W. L. DeClow	Cedar Rapids	Beinfait du Kat (Vol. 13, p. 330)	Belgian
2074	W. L. DeClow	Cedar Rapids	Christophe de Jeneffe 2293 (Vol. 13, p. 497)	Belgian
2073	W. L. DeClow	Cedar Rapids	Conquerant 2292, (37410)	Belgian
2072	W. L. DeClow	Cedar Rapids	Gustave 2294 (Vol. 13, p. 762)	Belgian
2071	W. L. DeClow	Cedar Rapids	Mirliton 2295 (Vol. 13, p. 902)	Belgian
2070	W. L. DeClow	Cedar Rapids	Jeannot de Beauvoir 2288 (Vol 14, p. 420)	Belgian

LINN COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2069	W. L. DeClow	Cedar Rapids	Sapeur 2299 (Vol 14, p. 347)	Belgian
2067	W. L. DeClow	Cedar Rapids	Monarque 2297 (37412)	Belgian
2065	W. L. DeClow	Cedar Rapids	Ardent 2280 (Vol. 13, p. 431)	Belgian
2064	W. L. DeClow	Cedar Rapids	Max de Zonne 2296 (37388)	Belgian
2063	W. L. DeClow	Cedar Rapids	Mouton Du Val 2289 (Vol. 13, p. 594)	Belgian
2062	W. L. DeClow	Cedar Rapids	Bismark De Rochefort 2226 (30548)	Belgian
2061	W. L. DeClow	Cedar Rapids	Tambour De Hal 2223 (24238)	Belgian
2060	W. L. DeClow	Cedar Rapids	Pierrot Du Hazior 2225 (29304)	Belgian
2059	W. L. DeClow	Cedar Rapids	Coquelin 2222 (Vol. 12, p. 511)	Belgian
2058	W. L. DeClow	Cedar Rapids	Pedro 2224 (Vol. 12, p. 687)	Belgian
2057	W. L. DeClow	Cedar Rapids	Fanchon 41119	Percheron
2055	W. L. DeClow	Cedar Rapids	Volcan 41711 (64121)	Percheron
2054	W. L. DeClow	Cedar Rapids	Vanneau 41712 (64117)	Percheron
2053	W. L. DeClow	Cedar Rapids	Partout 41432 (60430)	Percheron
2052	W. L. DeClow	Cedar Rapids	Transvaalien 41431 (60718)	Percheron
2051	W. L. DeClow	Cedar Rapids	Tropique 41430 (62178)	Percheron
2050	W. L. DeClow	Cedar Rapids	Pomard 41429 (60647)	Percheron
2048	W. L. DeClow	Cedar Rapids	Aimable 41427 (64642)	Percheron
2047	W. L. DeClow	Cedar Rapids	Robinson 41426 (58144)	Percheron
2046	W. L. DeClow	Cedar Rapids	Magnifique 41425 (61952)	Percheron
2044	W. L. DeClow	Cedar Rapids	Nestor 41423 (64588)	Percheron
2043	W. L. DeClow	Cedar Rapids	Musele 41437 (63624)	Percheron
2041	W. L. DeClow	Cedar Rapids	Ginglard 41435 (65036)	Percheron
2040	W. L. DeClow	Cedar Rapids	Roland 41433 (62949)	Percheron
2039	W. L. DeClow	Cedar Rapids	Ardent 41434 (60651)	Percheron
2151	W. L. DeClow	Cedar Rapids	Gouverneur 2227 (26046)	Belgian
656	W. W. Reece	Coggon	Billy Dugan 44251	Percheron
2199	E. H. Knickerbocker	Fairfax	Vital 2602 (37156)	Belgian
2201	E. H. Knickerbocker	Fairfax	Ecrassant 2591 (36070)	Belgian
2202	E. H. Knickerbocker	Fairfax	Louis de Terhaegen 2595 (35496)	Belgian
2203	E. H. Knickerbocker	Fairfax	Elmer de Lierde 2592 (Vol. 14, p. 809)	Belgian
2205	E. H. Knickerbocker	Fairfax	Titus 2600 (Vol. 13, p. 511)	Belgian
2206	E. H. Knickerbocker	Fairfax	Dilon de Silly 2590 (Vol. 13, p. 401)	Belgian
2208	E. H. Knickerbocker	Fairfax	Theo 2601 (Vol. 13, p. 512)	Belgian
2209	E. H. Knickerbocker	Fairfax	Brillant de Questenne 2584 (Vol. 13, p. 609)	Belgian
2607	J. I. Williams	Troy Mills	Bienvenu de Bougnies 2317 (Vol. 15)	Belgian
2678	J. F. Johnson	Cedar Rapids	Clericus 17969	Trotter
2706	Allen Bros	Marion	Alesor 16399	Trotter
1164	V. Lacock	Springville	Fleury 15809 (32215)	Percheron
2785	W. L. DeClow	Cedar Rapids	Boron 2631 (32530)	Belgian
2786	W. L. DeClow	Cedar Rapids	Eclaieur 15312	French Draft
2794	Jno. W. Altmyer	Central City	Border Wilkes 29022	Trotter
2839	Jos. Simanek	Walker	District 45796 (64193)	Percheron
2961	W. W. Vaughn	Marion	Gendarme 43404	Percheron
2981	Lewis Payton	Walker	Japan 29333	Thoroughbred
3031	C. L. Jordan	Central City	Questionneur 2005	French Coach
3077	Jno. W. Altmyer	Central City	Chadwick C. 33798	Trotter
3163	Henry Lefebure	Fairfax	Charlemagne 1799 (12290)	Belgian
392	G. C. Murphy	Walker	Red Cloud M. 34335	Trotter
2056	W. L. DeClow	Cedar Rapids	Echo 41710 (63190)	Percheron

LOUISA COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
13	S. C. Foster	Columbus Junct	Dick Crockett 29751	Trotter
216	Johnston Bros	Columbus Junct.	Chiloe 40861 (51387)	Percheron
217	Johnston Bros	Columbus Junct.	Ribi 40857 (53279)	Percheron
524	David Sheriden	Oakville	Jongleur 24497 (44219)	Percheron
455	W. W. Wagner	Letts	Bataclan 21264 (43368)	Percheron
733	D. H. Westbrook	Letts	Fly On (28469)	Trotter
794	W. J. Henderon	Morning Sun	Conway Confidence II 1230	Belgian
977	C. V. Le Boutillier	Morning Sun	Taupin 10704	French Draft
978	C. V. Le Boutillier	Morning Sun	E. R. J. 27241	Trotter
979	J. T. Carithers	Morning Sun	Brilliant IV. 1598	Belgian
1025	Wapello Horse Co	Wapello	Elder Champion II 6595	Shire
1026	Columbus City Horse Co	Columbus Junct.	Keota Enoch 12369	French Draft
795	W. J. Henderson	Morning Sun	Solim 8970	French Draft
1107	Nicholas Stamm	Letts	Bambin 16688 (34654)	Percheron
1109	Nicholas Stamm	Letts	Colonel 14222	French Draft
1195	L. F. McColm	Letts	Sir Lionel 10080 (10647)	Clydesdale
1777	W. W. Wagner	Letts	Lord Aesop 43058	Trotter
1796	Chas. Estle	Letts	Honni 24549 (44679)	Percheron
1791	D. E. Barrick	Morning Sun	Young Allerio 41025	Trotter
1984	W. W. Wagner	Letts	Ratanhia 7992 (38139)	Percheron
2183	Frank Okell	Morning Sun	Teddy R. 44856	Percheron
2184	J. G. Stafford	Morning Sun	Keota Illuminator 31889	Percheron
2185	J. G. Stafford & Frank Okell	Morning Sun	Coco 45491 (52333)	Percheron
2349	Herman Vollmer	Wapello	Silver Tom 28876	Percheron
2394	Jno. W. Jarvis	Morning Sun	Dori de Leex 2177 (31158)	Belgian

LUCAS COUNTY.

227	G. W. Dillman	Derby	Rosco 9705	French Draft
332	E. F. Brown	Russell	Black Foxy 4636	Morgan
81	E. F. Brown	Russell	Onus Black Hawk 5001	Morgan
80	E. F. Brown	Russell	Morgan King 4817	Morgan
688	Wm. M. Hawkins & Chas. Sheets	Chariton	General Grant 12319	French Draft
600	James Brown	Chariton	Pipelet 27113 (43904)	Percheron
509	Chas. R. Kirk	Chariton	Nisus 31745 (45921)	Percheron
598	Chas. R. Kirk	Chariton	Rigobert 40139 (52311)	Percheron
597	Chas. R. Kirk	Chariton	Hargrave Tom 7597	Shire
732	Kinmouth Bros	Russell	Stuntney Napoleon 8367 (22826)	Shire
731	W. H. Householder	Chariton	Walter Dewey 31721	Trotter
836	David Q. Storie	Chariton	Norwil Jr. 36043	Trotter
885	David Q. Storie	Chariton	Sam Swift 26575	Trotter
1101	H. D. Vawter	Chariton	Attractive Lad 10611	Clydesdale
1387	Daniel T. Tice	Russell	Tanner 11453	French Draft
1388	Daniel T. Tice	Russell	Bertrand 40116	Percheron
1429	W. W. Clore	Lucas	Conway Banker 6150	Shire
1430	W. W. Clore	Lucas	Tom Seevers 42154	Percheron
887	David Q. Storie	Chariton	Saunemin 23473	Percheron
1682	W. F. Kelly	Derby	Geant Jr. 25431	Percheron
1740	W. E. Johnson	Russell	Colin 28433 (48416)	Percheron
1742	N. M. Pierce	Russell	Admiral 40657	Percheron
1743	N. M. Pierce	Russell	Cormenon 16399 (24126)	Percheron
2164	Chas. R. Kirk	Chariton	Syveton 41409 (62709)	Percheron
2163	Chas. R. Kirk	Chariton	Franc 41414 (60394)	Percheron
2162	Chas. R. Kirk	Chariton	Tizi 41421 (618[illegible]6)	Percheron
2161	Chas. R. Kirk	Chariton	Bon Cru 41419 (61621)	Percheron
2160	Chas. R. Kirk	Chariton	Rivoli 41420 (62516)	Percheron
2159	Chas. R. Kirk	Chariton	Hugo 41410 (60247)	Percheron
2157	Chas. R. Kirk	Chariton	Vernoy 41413 (61891)	Percheron
2156	Chas. R. Kirk	Chariton	Castin 41416 (57619)	Percheron
2155	Chas. R. Kirk	Chariton	Pantin 41418 (57688)	Percheron
2165	Chas. R. Kirk	Chariton	Trump King 8545 (23923)	Shire
2178	E. F. Brown	Russell	Onus Foxy 5009	Morgan

LUCAS COUNTY—Continued.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2177	E. F. Brown	Russell	Star Foxy 5163	Morgan
2176	E. F. Brown	Russell	Black Hawk Eclipse 5000	Morgan
2175	E. F. Brown	Russell	Foxy Eclipse 5011	Morgan
2174	E. F. Brown	Russell	Tony Foxy 5013	Morgan
2173	E. F. Brown	Russell	Black Diamond 5162	Morgan
2272	I. G. Chapman	Derby	Cherry's Prince 10453	Clydesdale
2273	I. G. Chapman	Derby	Prince Gallant 6121	Clydesdale
2274	I. G. Chapman	Derby	Hyperion 15798	Percheron
335	J. S. Batten	Russell	Creston Saul 6231	Shire
2350	Greenville Horse Co	Russell	Operateur 24456 (44537)	Percheron
2363	J. F. Spiker	Chariton	James 11600	French Draft
2609	H. M. Spiker	Belinda	Red Rambler 42526	Trotter
2700	H. M. Spiker	Belinda	Les Authieux 10688	French Draft
2803	J. F. Spiker	Chariton	Refuge 5602	Clydesdale
2851	C. E. Foster	Chariton	Cherif 8711 (14626)	Percheron
2986	R. T. Huston	Russell	Agressive 6872	Trotter
2987	R. T. Huston	Russell	Stuntney Salathiel 6741 (Vol. 24)	Shire
3065	J. E. Ross & J. W. Kent	Lucas	Don-Pedro 41038	Percheron

LYON COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
249	James Kemplay	Rock Rapids	Chambrey 23350	Percheron
73	John Morgan	Rock Rapids	Verndale 35982	Trotter
39	Christopher Herbert	Rock Rapids	Bramble 10721	French Draft
403	Hartenhoff, Wenzel & Zorning	Lester	Nelson 40040	Percheron
2234	H. J. & Harm Meester	Ellsworth, Minn.	Lustre 45030	Percheron
2400	Willie Peters	George	Chrastos (63102)	German Coach
2483	G. S. Pohlman	Doon	Colonel 41539	Percheron
2492	Christopher Herbert	Rock Rapids	Invincible 15391	French Draft
2685	Fred Essmann	Ellsworth, Minn.	Black Rock 44679	Percheron
2824	Henry Nolte & Sons	Ellsworth, Minn.	King 26302	Percheron
2934	Henry Moen	Inwood	Adalgo 2521 (37454)	Belgian
3072	Louie Getting	Little Rock	Marabout 44828 (58431)	Percheron
3084	Frank Roth	George	Gironde 40341	Percheron
3090	O. J. Feay	Larchwood	Matchless 17824	Percheron
3116	Geo. Rosenberg	Ellsworth, Minn.	Armand 24419 (42785)	Percheron
3169	M. D. Shutt	Rock Rapids	Marshall 23389	Percheron
3170	M. D. Shutt	Rock Rapids	Dave 47396	Percheron
3220	Henry Kroeger	Alvord	Sans Souci 13699 (59180) P	French Draft

MADISON COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
170	A. D. Guy	Winterset	Gov. Cummins 13337	French Draft
102	Jno. Riser & Sons	Earlham	Brilliant De Neusvilles 911 (13918)	Belgian
224	Smith Bros	Earlham	Va-De-Bon-Coeur 12312 (5191)	French Draft
225	W. G. Mitchell	Winterset	Alexander the Great 23294	Percheron
295	J. L. Waltman	Macksburg	Creston Mack 10054	French Draft
500	Jackson Twp. Horse Co	Winterset	Royal Lad 7749	Shire
553	W. A. Forbes	Winterset	Benefactor F. 7847	Shire
463	Earlham Hackney Horse Co	Earlham	Brunel 626	Hackney
72	St. Charles Percheron Horse Co	St. Charles	Taupin 28142 (44779)	Percheron
609	Jos. Russell	Winterset	Thumper XXII 6369	Shire
596	Peru F. Coach Horse Co	Peru	Universe 2857	French Coach
595	Van Meter Horse Co	Winterset	Patissier 27392 (45693)	Percheron

MADISON COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
410	W. S. Hildebrand	Winterset	Creston Boy 6914	Shire
422	The Ored Percheron Horse Co	Winterset	Phoebus 34106 (45092)	Percheron
765	Loren Dunbar	Earlham	Reynard 19903	Percheron
772	C. M. Haxton	Earlham	Ony-West 32697	Percheron
868	Schouboe Bros	Earlham	Numa 3037 (2014)	German Coach
817	St. Charles & Wick Shire Horse Co	St. Charles	Warmington Brave Prince 6989 (19220)	Shire
882	Thomas Kirkland	Macksburg	Sporting Boy 41163	Trotter
881	Macksburg Draft Horse Co	Macksburg	Cadix 27450 (48503)	Percheron
1124	Geo. Z. Smith	Macksburg	Rampton Baron 7586 (21781)	Shire
1503	W. D. Bradshaw	Truro	Meti 33976 (53392)	Percheron
2290	Ord Percheron Horse Co	Winterset	Grisou 41221 (58517)	Percheron
2580	Robert Neal	Winterset	Porto 2138 (Vol. 12, p. 511)	Belgian
2894	J. D. Ross & J. M. Young	Winterset	Perry Mac 28266	Trotter
2805	Deer Creek Horse Co	East Peru	Prince Napoleon 50985	Percheron
1725	C. O. Clements	Earlham	Fanfaron 27393	Percheron
3208	Madison County Horse Co	Winterset	Sansonnet 45764 (54418)	Percheron
3209	C. P. Abbott	Macksburg	Tommy Dunton 45213	Trotter

MAHASKA COUNTY.

379	R. E. Porter	New Sharon	Sharon King 37310	Trotter
471	C. G. Tice	Taintor	Robert Cecil 9997	Clydesdale
498	Jno. W. Irwin	New Sharon	High Points 22292	Trotter
450	W. A. Sexsmith & J. M. Drennon	New Sharon	Ravaillac 27809 (47054)	Percheron
713	J. R. Moore	Barnes City	Transvalien (21634)	Belgian
461	New Sharon Shire & Hackney Horse Co	New Sharon	Childwall Chorister 7550 (20348)	Shire
462	New Sharon Shire & Hackney Horse Co	New Sharon	Heacham Hereward 693	Hackney
1284	A. L. Fox	New Sharon	Major Lacy 28768	Percheron
1328	E. E. Dalbey	Barnes	Isard 498	French Coach
1335	Wm. L. Garrett	Fremont	Montevillers II 9503	French Draft
1360	I. M. Reed	Rose Hill	Jno. Addison 10642	French Draft
1361	I. M. Reed	Rose Hill	Bedworth Boy 36968	Trotter
1362	J. N. Moore	Rose Hill	Perplexe (54841)	Percheron
1363	Thos. Seevers	Oskaloosa	Senator 33365	Percheron
1417	Henry Hawkinson	Fremont	Prince Surprise 11054	Clydesdale
1502	J. H. Barnes	Oskaloosa	Blackstone II 14551	French Draft
1542	L. Van Buskirk	Fremont	Aurungzebe 13069	French Draft
1569	J. H. Barnes	Oskaloosa	Bland 45148	Percheron
1572	J. H. Barnes	Oskaloosa	Grant 14552	French Draft
1571	J. H. Barnes	Oskaloosa	Lord Thomas 12784	French Draft
1570	J. H. Barnes	Oskaloosa	B. Raymond 40592	Percheron
1568	J. H. Barnes	Oskaloosa	Noel 40555	Percheron
1681	Michael Denney	Rose Hill	Torcy 15152	Percheron
1704	J. C. Jarard	Taintor	Hobson 8894	Clydesdale
1710	A. S. Jarard	New Sharon	Robbie Burns 11317	Clydesdale
1153	Maleby & Walden	Rose Hill	Sharon's Wonder 8673	Clydesdale
1760	R. H. & J. H. Barnes	Olivet	Bon Joan 11467	French Draft
1804	R. Rodman	Oskaloosa	Triboullet 16757 (30543)	Percheron
1803	R. Rodman	Oskaloosa	Remus 11466	French Draft
2009	R. H. & J. H. Barnes	Oskaloosa	D'Orsay 15181	French Draft
2010	R. H. & J. H. Barnes	Oskaloosa	Black Beauty 15185	French Draft

MAHASKA COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2011	R. H. & J. H. Barnes	Oskaloosa	Buster 15186	French Draft
2012	J. H. Barnes	Oskaloosa	Blackstone 15148	French Draft
2013	J. H. Barnes	Oskaloosa	Dewey 15149	French Draft
2014	J. H. Barnes	Oskaloosa	Admiral 46555	Percheron
2015	J. H. Barnes	Oskaloosa	Triboullet 46557	Percheron
2016	J. H. Barnes	Oskaloosa	Coco 46561	Percheron
2017	J. H. Barnes	Oskaloosa	Bosler 46556	Percheron
2018	J. H. Barnes	Oskaloosa	Wilton 46562	Percheron
2019	J. H. Barnes	Oskaloosa	Parfait 46560	Percheron
2020	J. H. Barnes	Oskaloosa	Lacy 46563	Percheron
2022	Arie Kool	Leighton	Ferndale 11685	Clydesdale
2023	Arie Kool	Leighton	Taupier 43736 (61059)	Percheron
2113	Steele & Brubaker	Cedar	Sauveur 27825 (48282)	Percheron
2114	Steele & Brubaker	Cedar	Vasistas 44472 (59403)	Percheron
2245	M. H. Davidson	Oskaloosa	Captain Reaper 43483	Trotter
1287	W. C. Hite	Lacey	September 11613	Clydesdale
2315	Alex Soults	Barnes City	Barville III 9823 (13033)	Percheron
2477	R. W. Hoit	Beacon	Powerful 47596	Percheron
2603	J. F. Sheley	New Sharon	Keota Cheri 18864	Percheron
2642	J. C. Redman	Leighton	Robert 44358	Percheron
2643	J. C. Redman	Leighton	Sherlock 42139	Percheron
2644	J. C. Redman	Leighton	Diplomat 15343	French Draft
2645	J. C. Redman	Leighton	Paul 15341	French Draft
2592	J. H. Barnes	Oskaloosa	Black Lad 13512	French Draft
2759	H. W. Lundt	Taintor	Cheri II 10438	French Draft
2760	H. W. Lundt	Taintor	Vesuve 10931 (934) N	French Draft
3015	Heisel & Burrier	Fremont	Billington 8483 (20249)	Shire
3099	Star Horse Co	Fremont	Richland 47441	Percheron
3127	Reed & Moore	Rose Hill	Medine 46182 (60405)	Percheron
3150	J. I. Molyneaux	Barnes City	Blackbrooke Verona 8606 (20259)	Shire
3132	J. C. Redman	Leighton	Joe 15706	French Draft

MARION COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
602	F. M. Ridgeway	Swan	Emerald 12135	French Draft
601	F. M. Ridgeway	Swan	Pride 14422	French Draft
727	L. Maasdam & Son	Pella	Nova 49735	Am. Trotter
740	W. W. Rankin	Knoxville	Legal Tender 6322	Shire
764	John H. Cowman	Percy	Santiago 13030	French Draft
476	Pella Horse Co	Pella	Aride 25056 (45434)	Percheron
777	L. Maasdam	Pella	Volage 55179	Percheron
819	Walter Whitlatch	Columbia	Bootle Champion 3963 (10991)	Shire
821	Lee Wilson	Columbia	Black Sam 40065	Percheron
909	Henry Bickford	Columbia	Stuntney Lubin 6731	Shire
908	Henry Bickford	Columbia	Rex of La Moille 32067	Percheron
1015	Johannes Stravers	Pella	Charlot (55213)	Percheron
1354	Van Derwaal & Van Zante	Pella	Jules 1354	Belgian
1237	Marysville Horse Co	Knoxville	Lord Fordy 6909 (Vol. 24)	Shire
1522	Oscar Buxton	Knoxville	Cyclone 15655 (24031)	Percheron
1587	L. V. Colwell	Columbia	Searchlight II 6396 (19115)	Shire
1583	L. V. Colwell	Columbia	Admiral B. 22850	Percheron
1807	J. B. Elliott	Knoxville	Baron De Jay 41467	Trotter
1864	Seth Way	Knoxville	Emmet H. 31170	Trotter
2021	W. M. Black	Knoxville	Dieppe 15067	French Draft
1655	W. H. Maasdam	Pella	Expert 5882	Trotter
2211	Hartley & Wilson	Columbia	Lamy 46057 (56473)	Percheron
2581	H. H. Conrey	Knoxville	Bristol Lange 1441 (25360)	Belgian
2876	C. L. Hardman	Knoxville	Roitlet 25037 (44653)	Percheron
863	P. Jackson & Sons	Pella	Rose Lad 11316	Clydesdale
3019	Harvey James	Knoxville	Rampart 6775 (19963)	Shire
3058	D. C. Belknap	Knoxville	Charles Walton 44918	Trotter

MARION COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
820	Bellamy & Hanna	Harvey	Fred Willes 38017	Trotter
3126	J. M. Maddy	Knoxville	Stuntney Fearnaught 5347	Shire
3159	Lewis Dunham	Knoxville	Keota Warsaw 20693	Percheron
3201	Isaac Hodgson	Pleasantville	Vigoureaux (55019)	Percheron
3213	Wm. Visser	Knoxville	Man-Well 33885	Percheron
3223	Mike Slykhuis, Jno. DeBok and Matthew Karl	Percy	Scarcliffe Powerful (19110)	Shire
333	Wm. J. Way	Dallas	Keota Seductor 18225	Percheron
3304	Levi W. Caulkins	Bussey	Treko G. 45269	Trotter
3332	Bussey Horse Co	Bussey	Armand 25587 (42962)	Percheron
3360	J. D. Cunningham	Knoxville	Kentucky Jay 38687	Trotter
3359	J. D. Cunningham	Knoxville	Directum Boy 31294	Trotter
3349	Neifert & Gillion	Attica	Paragon 24940	Percheron
3319	A. K. Hart	Pleasantville	George B. 45537	Percheron

MARSHALL COUNTY.

538	F. C. Knight	Laurel	Brooklyn 6487	Shire
370	Edw. Blackburn	Laurel	Major B. 11141	Clydesdale
342	J. S. Paul	Laurel	Sans-Peur 34016 (51102)	Percheron
367	Wm. Schultz	Laurel	McHanna 54531	Trotter
369	Edw. Blackburn	Laurel	Prince Henry 10990	Clydesdale
191	C. A. Rolston	Liscomb	Jupiter 30599 (46712)	Percheron
183	Jno. Brown	Marshalltown	Major Marion 9584	Clydesdale
316	Henry Hilleman, Sr	State Center	Newton Duke 7014	Shire
490	W. E. Elliott	Clemons	Red Gregory 41805	Trotter
601	LeGrand Percheron Horse Co	Le Grand	Petrus 27054 (43878)	Percheron
405	W. B. Elliott	Marshalltown	Wayne Boy 30242	Trotter
752	Wm. Paul	Laurel	Wesley V. 13549	French Draft
751	Wm. Paul	Laurel	Keota Romer 19485	Percheron
833	Louis Eckhardt	State Center	Laubet 10689	French Draft
1270	C. W. Bergman	Laurel	Keota Lord 7588	Shire
1351	Chas. Greatreaks	Marshalltown	John Adrian 0611	Trotter
1506	J. A. Ward	Gilman	Glenwood Dewey 3429	Shetland Pony
1507	J. A. Ward	Gilman	Mac Claskie Jr. 9470	Clydesdale
1508	J. A. Ward	Gilman	Tunis 11095	French Draft
1536	B. F. & C. A. Robinson	Marshalltown	Junot 35620 (53132)	Percheron
1512	J. W. Crammer	Liscomb	Sebastian 257 (4)	Belgian
1814	D. C. Bligh	Laurel	Water Boy 34784	Trotter
1818	Jacob Waltemeyer	Marshalltown	Forban 813 (9770)	Belgian
2538	Bare Grove Draft Horse Co	State Center	Cavaignac 27832 (44517)	Percheron
2339	W. A. Taggart	State Center	Lipton 9265	Clydesdale
2370	H. L. Hartwig	State Center	Wenona Forester 4765	Shire
2745	Dannen Bros	Marshalltown	Blockey Prince 19668	Percheron
2049	C. B. Dannen & Sons	Melbourne	Ernest 41428 (64967)	Percheron
2768	B. L. Pyle	Marshalltown	Duchesne 25440 (42847)	Percheron
2848	E. G. Miller	Melbourne	Riffain 25149 (43641)	Percheron
2913	Henry D. Neidert	State Center	Rob Edwards 12394	Trotter
3230	Sherman Wolfgong	Marshalltown	Mongaillard 41232 (53040)	Percheron
3231	Sherman Wolfgong	Marshalltown	Brulot 41233 (52589)	Percheron
2553	Sherman Wolfgong	Marshalltown	Joubert de Silly 2627 (21952)	Belgian
3243	E. E. Carver	Marshalltown	Prince Araneta 43474	Trotter

MILLS COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
542	Phillip Hambsch	Malvern	Arrondi 26131 (44741)	Percheron
176	C. H. Peer	Strahan	Lord Gregory 42903	Trotter
175	C. H. Peer	Strahan	Brown Eagle 32794	Trotter
174	C. H. Peer	Strahan	Harry Mount 7024	Trotter
647	W. E. Wickersham	Glenwood	Barthelmy 1156 (21580)	Belgian
646	W. E. Wickersham	Glenwood	Alpago (1368)	Oldenb'rg Coach
419	A. S. Edwards	Glenwood	King Mills 35959	Trotter
703	A. M. Miller	Glenwood	Hinxton Jumbo 6391 (10688)	Shire
708	C. L. Miller	Glenwood	Belkader (22968)	Percheron
758	Geo. A. Coiner	Malvern	Insurgent 7728	Shire
822	C. T. Boles	Malvern	Jessie 23830	Percheron
1012	R. E. Dunn	Emerson	Rambler 12911	French Draft
1130	Wales Shire Horse Co	Emerson	Harshfield Warrior 7019	Shire
1196	Percheron Horse Co	Glenwood	Luther 29507 (47005)	Percheron
1381	Albert Pullman	Silver City	Kiaser 26004	Percheron
1370	C. E. Ballain	Emerson	Jean Bart 12732	Percheron
1463	J. L. Douglas	Henderson	Keota Spy 18226	Percheron
1464	J. L. Douglas	Henderson	Dalzel 25634	Percheron
1668	D. M. Culver	Hastings	Sophocles (7479) 5895	Percheron
1150	W. J. Roberts	Henderson	Driftway 31612	Trotter
1823	J. B. Maynos	Henderson	Nailstone Sidar 7987 (22612)	Shire
2281	S. S. & R. B. Summers	Malvern	Robert Burns 5632	Shire
2995	Geo. Schurr	Strahan	Monone 41547 (62758)	Percheron
2996	Geo. Schurr	Strahan	Flag of Truce 8823 (22364)	Shire
3033	C. M. Follett	Malvern	Nailstone Luke 8826 (24783)	Shire
3034	L. C. Stevenson & W. H. Salyers	Malvern	Coco 44305 (58097)	Percheron

MITCHELL COUNTY.

400	W. D. Runge	Osage	Emoi 27436 (43650)	Percheron
137	S. T. Doyle	Riceville	Valliant 41035 (58028)	Percheron
136	S. T. Doyle	Riceville	Estevan 40356 (51744)	Percheron
152	Stacyville Percheron Horse Co	Stacyville	Solim 24740 (43671)	Percheron
145	C. B. Jacobs	Osage	Charming Tarbreoch	French Draft
214	H. W. Clay	Osage	Bayard de Tooz (29730)	Belgian
212	A. I. Stacy	Stacyville	Star 29780	Percheron
230	E. J. Howe	Osage	Stuntney Barak 6730	Shire
559	Richard Jordan	McIntire	Gilbert 33622	Percheron
558	Richard Jordan	McIntire	Woodbury Herod 4554	Morgan
560	Richard Jordan	McIntire	Bill Morrison 19327	Percheron
645	Mitchell Belgian Horse Ass'n	Osage	Lingot (18150)	Belgian
666	Riceville French Draft Horse Co	Riceville	Tigre 11275	French Draft
665	J. C. Kathan & Son	Osage	Ned K. 43983	Trotter
789	J. C. Ashmore	Osage	Nateby Tom 3509 (10036)	Shire
883	Fred Stark	Riceville	Bataille (19951)	Percheron
1174	O. V. Perry	Riceville	Hoir of Fame 10639 (11607)	Clydesdale
1398	C. H. Duenow	St. Ansgar	Stuntney Dante 7059	Shire
1657	G. W. Shelhamer	Riceville	Olney 20998	Percheron
17	W. D. McCabe	Osage	Pilot Panic 4861 37792	Morgan Trotter
1345	Fred Worple	Alta Vista	Vermouth 16021	Percheron
2466	Richard Jordan	McIntire	Mack 47151	Percheron
2536	Frank Krulish	St. Ansgar	Magnus Boy 12545	Clydesdale
2813	C. B. Wilkes	Riceville	Lofty 22202	Percheron
2863	St. Ansgar Horse Co	St. Ansgar	Versailles 25196 (45415)	Percheron
2880	Richard Jordan	McIntire	Governor Roosevelt 23185	Percheron

MITCHELL COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2888	H. A. Skinner	Riceville	Dancing Master 33349	Trotter
2940	J. H. Penny	Stacyville	Canaillard 21514	Trotter
2957	J. C. Kathan	Osage	Kentola 44288	Trotter
2956	J. C. Kathan	Osage	Norvaillis 43107	Trotter
3068	Riceville French Coach Horse Co	Riceville	Vercingetorix 3292	French Coach
3062	Wert Roe	Riceville	Kimberley 27346 (46790)	Percheron
3290	Herbert Fletcher	Osage	Mercure (630)	French Draft

MONONA COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
890	Moorhead Imported Percheron Co	Moorhead	Bequin (43629)	Percheron
889	E. E. Richards	Moorhead	Schley 30716	Percheron
888	C. L. Watkins	Whiting	Billy Bartlett 35827	Trotter
1493	Anton Hanson	Soldier	Courcival 27412 (45661)	Percheron
1494	M. B. Hildreth	Soldier	Ethan Allen 30974	Percheron
1789	A. L. Erskine	Castana	Black Beauty II 33375	Percheron
2195	J. Gries	Ute	Bayard 27400 (48374)	Percheron
2437	H. Koth	Monona	Major Glencoe 9173	Clydesdale
2485	J. A. Sarff	Whiting	Vinarold 38107	Trotter
2658	W. W. Griffith	Onawa	Prince Soliman 43382	Percheron
2762	G. C. Harrison	Blencoe	Amour 26914 (45827)	Percheron
2763	G. C. Harrison	Blencoe	Marquette 40952	Percheron
3071	S. D. Jewell	Whiting	Mat Kane 31575	Trotter
3151	A. V. Van Dorn	Rodney	Bruno 33739 (46059)	Percheron
3197	Onawa & Blencoe	Onawa	Raisonnable 24711 (45404)	Percheron

MONROE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
401	J. F. Fitzpatrick	Georgetown	Alfred 297 (9)	German Coach
171	J. A. Smith	Albia	Keota Mesmerist 24848	Percheron
150	T. B. McDonald	Lovilia	Wick Spencer 12511	Trotter
107	L. A. McCreery	Albia	Castleman 16072	Trotter
88	Ira Noble	Albia	Roma 19920	Percheron
87	Ira Noble	Albia	Red Maple 33985	Trotter
205	W. B. Griffin	Albia	Ernest Wilton 26829	Trotter
207	W. B. Griffin	Albia	Paulus 17248	Percheron
206	W. B. Griffin	Albia	Belding 27923	Trotter
299	Farmers' Mutual Horse Co	Albia	The Saint (20971)	Shire
59	Fred Galliers	Albia	Mark 5696	Shire
551	A. Scieszinski	Melrose	Putnam 8755	Clydesdale
1303	J. R. Love	Albia	Gideon D. 7647	Shire
1382	J. S. Quinn	Melrose	Michel (29753)	Percheron
1564	Lovilia Shire Horse Co	Lovilia	Wenlock Thumper 6325 (20153)	Shire
1693	J. F. Roney	Melrose	Brutus 5224	Shire
1694	J. F. Roney	Melrose	Newaygo 9192	Trotter
2152	Avery Horse Co	Avery	Chacal 41415 (58077)	Percheron
2172	J. R. Harker	Ute	Corsair 40934	Percheron
2217	J. F. Coleman	Melrose	Osceola Banker 8830	Shire
1277	Ira Robinson	Albia	Loulon 28367 (48118)	Percheron
2334	J. J. Mullin	Melrose	Fleurus 14851 (58414) P	French Draft
2629	Avery Horse Co	Avery	Dunois 28439 (45239)	Percheron
2567	J. R. Love	Albia	Bluff Creek Tom 8185	Shire
2568	J. R. Love	Albia	Dick Monroe 8186	Shire
2826	J. R. Love	Albia	Black Peter 8723	Shire

MONTGOMERY COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
535	F. L. Steninger	Red Oak	Cherbourg 24274 (44003)	Percheron
536	F. L. Steninger	Red Oak	The Rogue 5413	Shire
359	A. D. Smith	Grant	Dreyfus 9365	French Draft
358	A. D. Smith	Grant	Rival 43256	Percheron
210	J. D. Gourley	Villisca	Villisca General 5210	Shire
514	T. J. Reznor	Stennett	Fruitier 40415 (48530)	Percheron
1223	J. H. Thompson	Elliott	McKinley III 7047	Shire
1222	J. H. Thompson	Elliott	Creston Archie 3408	Shire
1253	A. C. Weidman	Red Oak	Raynal 25163 (44651)	Percheron
1792	Wm. Arnold	Red Oak	Major II 8090	Shire
1312	Elliott Draft Horse Co	Stennett	Girton Rogue 5348	Shire
223	J. M. Alcorn	Grant	Fred 50725 11735	Percheron French Draft
2204	C. E. Thompson	Elliott	Creston Boy 7968	Shire
2709	J. E. Farmer	Villisca	Albert Margrava 42964	Trotter
2713	M. M. Smith	Villisca	Tribsign 45044	Trotter
2729	Henry Ebert	Red Oak	Francois II 40111	Percheron
246	F. E. Shires	Elliott	Pierre 10912 (3425)	French Draft
3036	C. P. Van Valkenburg	Villisca	St. Hilaire 42229 (48556)	Percheron
3070	C. P. Van Valkenburg	Villisca	Cafe 48317 (55411)	Percheron
3102	D. B. Gunn	Red Oak	Gamaloon 7825	Trotter
3211	Jno. P. Warne	Villisca	Black Dewey 15768	French Draft
3101	D. B. Gunn	Red Oak	Plum Right 4945 37341	Morgan Trotter

MUSCATINE COUNTY.

654	G. A. Milnes	West Liberty	Bonneval 32337 (45494)	Percheron
653	G. A. Milnes	West Liberty	Volunteer 22521	Percheron
1102	Wilton Horse Breeders' Ass'n	Wilton	Gaillard 28737 (44740)	Percheron
1104	W. A. Heck	West Liberty	The Sheriff 38114	Trotter
1106	P. N. Gibson	West Liberty	Boissy 25151 (45438)	Percheron
1105	P. N. Gibson	West Liberty	Cherbourg 2078	French Coach
1114	M. P. McKeown	Cranston	Keota Brevet 21660	Percheron
1132	E. J. Brown & R. T. Shannon	Nichols	Porto 1584 (20878)	Belgian
1133	E. J. Brown & R. T. Shannon	Nichols	Bon Micephorus 6063 (17189)	Shire
1125	E. A. Poole	West Liberty	Russell Edsall 34782	Trotter
1211	Chas. H. Stone	Muscatine	Mammon 2020	Shetland Pony
1324	E. F. Richman	Muscatine	Pancantara 39080	Trotter
1325	E. F. Richman	Muscatine	Red Knight 13880	Trotter
1348	M. B. Walters	West Liberty	Tam-Tam 14239 (19079)	Percheron
1367	F. W. Dickey	West Liberty	Lindsay Dale 40391	Trotter
1411	E. F. Richman	Muscatine	Linda's Duke 25377	Percheron
1778	Union Stock Co	Conesville	Riverain 25596 (45452)	Percheron
20	Fred Waters	West Liberty	Canotier 24445 (44604)	Percheron
1769	Boyd Bros	Conesville	Jupiter of Worsley 5373 (16202)	Shire
3112	F. A. Pike	Nichols	Saxon Jet 8867 (21843)	Shire
3248	Will Maxwell	Conesville	L'Ami 21190	Percheron

O'BRIEN COUNTY.

431	Schneider & Saupe	Sheldon	Algerien 12260 (52673)	French Draft
163	Big Four Belgian Breeding Ass'n	Sheldon	Mon Desir 1694 (23708)	Belgian
141	Wm. Fraser	Sutherland	Figaro 31385	Percheron
118	John Keene	Sutherland	Fashion 1084	French Coach
189	C. W. S. Gilson	Sanborn	Gilford Bevans 42796	Trotter
70	A. O. Crooks	Primghar	Nailstone Don 5731 (16845)	Shire
42	Alex Scott	Paullina	Pride of Iowa 10954	Clydesdale
432	Schneider & Saupe	Sheldon	Maskomita 24661 (43287)	Percheron

O'BRIEN COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
662	George G. Kellum	Paullina	Berton 32949	Percheron
661	George C. Kellum	Paullina	Prince Paullina 30670	Percheron
705	W. A. Smith	Paullina	Chansler 35747	Percheron
706	W. A. Smith	Paullina	Pindore 42227 (47470)	Percheron
1048	H. C. Thayer	Primghar	Condon 21519	Percheron
1137	J. R. Tibbets	Hartley	Prince Bless 5178	Morgan
1517	David S. Taylor	Sheldon	Seductuer 40077	Percheron
1549	R. C. Jordan	Sutherland	J. D. M. 0166	Trotter
1623	John Breme	Hartley	Rodney Rex 1623	Trotter
1624	R. P. Powers	Hartley	Altro 35068	Trotter
1641	G. W. Sherwood	Sheldon	Major Bell 32605	Trotter
1642	G. W. Sherwood	Sheldon	Clarke 41101	Trotter
1643	G. W. Sherwood	Sheldon	Lockheart 6864	Trotter
1644	G. W. Sherwood	Sheldon	Woodford Wilkes 2538	Trotter
2232	P. J. Weir	Sheldon	Corbit 32946	Percheron
2233	P. J. Weir	Sheldon	Thorney Royal 8631 (19182)	Shire
2235	B. F. Shirk	Sutherland	Melito 23352	Percheron
2247	W. C. Kimmell	Sheldon	Hector 31092	Percheron
2490	W. J. Ullman	Paullina	Allegro 20046	Percheron
2605	Noble McDonald	Gaza	Gay Montrose 985 (9916)	Clydesdale
2687	Thos. Prendergast	Sanborn	Bartle 14509	French Draft
2242	W. J. Buffington	Paullina	Stuntney Golden King 5744	Shire
2545	Wm. Kluender & Co	Paullina	Kisposcki 50535 (52254)	Percheron
2583	H. E. Brown	Primghar	Chambouder 45400	Percheron
2587	H. E. Brown	Primghar	Archer 45401	Percheron
2730	Richardson & Culp	Sutherland	Coronet 46272	Percheron
3181	Wilson Bros	Primghar	Tom Mack 14945	Trotter
3212	Sam Webster	Archer	Herzuba (Vol. 7)	Oldenb'rg Coach
3252	P. D. Fuller	Sutherland	Temeraire 45807 (62265)	Percheron

OSCEOLA COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
60	W. S. Foley	Melvin	Prudent 26736 (48349)	Percheron
1202	Jno. N. Jackley	Ashton	Kirsch II 11837	Percheron
1349	Ashton Horse Co.	Ashton	Bayard Berni 1845 (23388)	Belgian Draft Percheron
1350	L. Pommer & H. H. Wubbena	Ashton	Fayot 52453 12928	French Draft
1336	H. E. Dean	Ocheyedan	Durben 40011	Trotter
1830	Jno. Price	Ocheyedan	Manliness 25546	Percheron
614	J. & N. Frese	Sibley	Gabels Victor 7124	Shire
2335	G. E. Mackinson	Sibley	Arvola 3307	German Coach
2336	G. E. Mackinson	Sibley	Fusain 28291 (45804)	Percheron
2681	G. E. Mackinson	Sibley	Columbus 8279	Shire
2682	G. E. Mackinson	Sibley	Matteval 44814 (54795)	Percheron
2793	Sibley Belgian Horse Co	Sibley	Edgard 2622 (17888)	Belgian
2859	R. Klatt	Sibley	Knightly King 15997	Trotter
2935	Geo. Hamilton & Son	Ocheyedan	Hero Hobson 31544	Trotter
3053	Horton Township Horse Co	Ocheyedan	Keota Mouton 18872	Percheron
3089	G. W. Snyder	Sibley	Louis de Fallais 1244 (14696)	Belgian
3184	Joe Cload	Ocheyedan	Fulgurant 26704 (45618)	Percheron

PAGE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
209	W. L. Lundy	Clarinda	Axlon 40254	Trotter
625	F. P. Barr	Clarinda	Alaxandre 13083	French Draft
624	F. P. Barr	Clarinda	Napoleon 13030	French Draft
791	W. H. Dutton	Coin	Champion 566 (2856)	Belgian
853	Edward Davison	Clarinda	Nathanson 5973	Thoroughbred
1034	Jno. Nothwehr	Yorktown	Caporal 32662 (45508)	Percheron
1016	A. A. Brush	Shenandoah	Luculus (48711)	Percheron

PAGE COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
992	East River Percheron Horse Co	Clarinda	Capitane 32425 (47591)	Percheron
1019	Wm. Hiser	Essex	Vernot (57364) 45572	Percheron
1193	Wall Street Horse Co	Hepburn	Danube 5703 (44226)	Percheron
1194	Wall Street Horse Co	Hepburn	Tricotteur 26073 (44684)	Percheron
1191	Yorktown Horse Co	Yorktown	Gaulois 13559	French Draft
1235	J. M. Bryson	Clarinda	Prince Oneer 35763	Trotter
1285	J. A. Latimer	Shenandoah	Dewey 27475	Percheron
1619	Thos. Wiggins	Coin	Merfield Rival (7787)	Shire
1680	Jno. Manifold	Shenandoah	Leduc 23313	Percheron
1702	Jno. Rurode	Coin	Roublard 14082 (22897)	Percheron
1735	G. G. Fleener	Clarinda	Darius 8883	French Draft
1736	G. G. Fleener	Clarinda	Black Hawk 14734	French Draft
1737	G. G. Fleener	Clarinda	Mintaka 9676	French Draft
1790	Wm. F. Schenck	Clarinda	Creston King 6026	Shire
1811	College Springs Horse Co	College Springs	Brilliant III 10086	French Draft
2104	R. A. Duncan	Shambaugh	Roy 39451	Trotter
2105	R. A. Duncan	Shambaugh	Brooklyn 11101	French Draft
2135	F. P. Barr	Clarinda	Duke of Wellington 13084	French Draft
2141	W. F. Hopker	Northboro	Beranger 35566 (48918)	Percheron
2140	W. F. Hopker	Northboro	Francis 41697	Percheron
2144	A. G. Harris	Northboro	White Nomesis 34581	Trotter
2122	A. G. Harris	Northboro	Hempfield Sampson Jr. 8774	Shire
2330	B. F. Allender	Essex	Charmant 47514 (56243)	Percheron
2357	A. G. Harris	Northboro	Stuntney Rooineck 8859 (22834)	Shire
2791	W. T. Goodman	Coin	Gilbert 14034	French Draft
2890	C. M. Cowen & J. F. Chase	Shenandoah	Drift Allerton 36428	Trotter
2134	F. P. Barr	Clarinda	Pourquoi Pad III 6358 (20122)	French Draft
3153	J. B. Lawson	Norwich	Nonant III 6790 (14568)	French Draft

PALO ALTO COUNTY.

228	N. J. Wright	Cylinder	Freedom 33697	Percheron
153	J. J. Steil	Emmetburg	Ben Otto 23370	Percheron
36	H. A. Thomas	West Bend	Moliere Jr. 25762	Percheron
418	Melvin Fisk	Curlew	Ellerslie Fisk 32546	Trotter
1103	Osgood Percheron Horse Co	Osgood	Maupas 40460 (51903)	Percheron
8	H. A. Mason	Ruthven	Duke 22798	Percheron
1231	Jonas Mantz	West Bend	Carpare 2237 (25122)	Belgian
2030	M. F. Coonan	Emmetsburg	Joe Weitzel 21522	Trotter
2343	J. B. Jackson	Osgood	Lors Rene Jr. 43857	Trotter
2397	J. J. Steil	Emmetsburg	Ergo A. 40349	Trotter
2132	J. R. Frame	Cylinder	Vigoureux 22883 (43362)	Percheron
2502	E. D. Spencer	Emmetsburg	Bardon Blaze 6450 (15973)	Shire
2300	J. J. Steil	Emmetsburg	Aid Dunton 45059	Trotter
2631	W. H. Dempsey	Curlew	Kilsley Bonny Tom 5291 (17426)	Shire
2837	Hardi Horse Co	Graettinger	Hardi 28370 (48420)	Percheron
2890	C. P. McKowen	Rodman	Indoc 524	French Draft
3120	J. H. Nolan	Ruthven	Archer Boy 11941	Clydesdale
2372	B. F. Frazier	Ayrshire	Dragon 50888 (59398)	Percheron
3188	Hans Johnson	Ruthven	Sidi (46215)	Percheron
3185	Claer, Debolt & Co	Ayrshire	Lord Minto 43403	Percheron
3241	Clarence Maxwell	West Bend	Cyclone 7230	Shire
3242	Clarence Maxwell	West Bend	Puckrup Prince Harold Jr. 8233	Shire

PLYMOUTH COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1589	Martin McNamara	Remsen	Bramble 29841	Percheron
1714	Nick Thill	Oyens	Theodore 140	Suffolk
1793	T. J. Wilson	Kingsley	Ondawa (Vol 6, p. 580)	Thoroughbred
1983	Held Bros	Hinton	Jonathan 2 (1302)	Oldenb'rg Coach
1882	Held Bros	Hinton	Enzain 3107	German Coach
2123	D. M. Baker & Co	Merrill	King Rayon 25624	Percheron
2282	Remsen - Percheron Horse Co	Remsen	Sosthene 33964 (53249)	Percheron
2414	Hennrich & Detloff	Le Mars	Gilbert 1094	Cleveland Bay
2630	A. R. Whitney	Akron	Volubilis 3405	French Coach
2704	John Luken	Le Mars	Railleur 1196 (Vol. 9)	Belgian
2922	Ireton & Struble Percheron Horse Co	Struble	Premier 40170 (51434)	Percheron
3104	J. W. Patterson	Akron	Premier Prince 9189	Clydesdale

POCAHONTAS COUNTY.

452	Alex Barber	Rolfe	Eckhart 30745	Trotter
454	A. D. Cleal	Rolfe	Saturne 25704 (44161)	Percheron
357	L. N. Ellis	Laurens	Sim Sim 33973	Trotter
372	H. F. Toben	Palmer	Brilliant de Lieffe 23810	Belgian
104	J. W. Brock	Plover	Lavance 32949	Trotter
103	J. W. Brock	Plover	Audubon Boy 12842	French Draft
304	Jacob Winegarden	Pocahontas	Martin IV 41848	Percheron
293	W. G. Runyan	Havelock	Rob Roy 9442	French Draft
321	W. E. Campbell	Gilmore City	Oliver 34870	Percheron
684	W. A. Kyle	Laurens	Financier II 1440 (25362)	Belgian
726	Wm. Steen	Havelock	Martin V. 13123	French Draft
818	A. S. Wood	Fonda	Stayr 41462	Trotter
877	Jas. Frakjar	Rolfe	Prince Ponk 11889	Clydesdale
876	Jas. Frakjar	Rolfe	Prince Lynedoch 9088	Clydesdale
1200	E. M. Kellogg	Gilmore City	Kruger 32452	Trotter
1461	Lilly Horse Co	Fonda	Paulin 23076	Percheron
1629	O. F. Edwards	Havelock	Ralph 1629	Percheron
784	Lind & Charlton	Rolfe	Martin 17067 (35482)	Percheron
2268	M. D. Wolcott	Gilmore City	Black Monarch 42249	Percheron
2270	M. D. Wolcott	Gilmore City	Vulcain 42906	Percheron
2340	W. A. Galbraith	Fonda	Fontanelle 26782	Percheron
2434	Lyman Bros	Gilmore City	Dictator 10759	French Draft
2435	M. L. Miller	Pocahontas	Keota Thrive 2485	Percheron
2436	M. L. Miller	Pocahontas	Cook 25138	Percheron
2439	Alex Parker	Rolfe	Orville 29276	Percheron
2441	W. G. Runyan	Havelock	Univers 47773 (59594)	Percheron
2271	Wilder Small	Gilmore City	Leward 35762	Percheron
2573	L. A. Dumond	Fonda	Black Diamond 42748	Percheron
2574	B. F. Barber	Fonda	La Porte Boy 28849	Trotter
2761	Olson Bros	Palmer	De Foe 15528	French Draft
1263	B. F. Barber & L. A. Dumond	Fonda	Borolyptol 32229	Trotter
2885	H. D. Brinkman	Rolfe	Martin VII 13125	French Draft
2895	W. A. Elliott	Pocahontas	Prince Thayer 44061	Trotter
2930	Frank Short	Rolfe	Capitaine 41449 (64119)	Percheron
2950	Harvey Eaton	Fonda	Mere Harold 5639 (16251)	Shire
3040	W. P. Hopkins	Laurens	Haiti 34283 (51666)	Percheron
3041	W. P. Hopkins	Laurens	Neptune-Pacha 585 (4212)	Belgian
2269	G. C. Grove	Rolfe	Deneau 35759	Percheron

POLK COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
402	Campbell Belgian Horse Co	Campbell	Faro de Reille (16838)	Belgian
83	Chas. Irvine	Ankeny	Gabriel 1286 (25336)	Belgian
161	A. K. Good	Ankeny	Grenat 41001 (64205)	Percheron
162	A. K. Good	Ankeny	Nailstone Teddy 7980 (22059)	Shire
270	T. J. Shaw	Mitchellville	Major Consul 40342	Trotter
58	E. J. Boynton	Des Moines	Macklin 15881	Trotter
14	Lester Clark	Valley Junction	High Tide 26760	Percheron
15	Lester Clark	Valley Junction	Dewey 21748	Percheron
447	Commeggs & Stoll	Bondurant	Voltaire 10482	French Draft
541	G. W. Smith	Altoona	Creston Jerome 5978	Shire
502	Jas. A. Sage	Ankeny	Stuntney King Cole III 3676 (10538)	Shire
501	Jas. A. Sage	Ankeny	Newton Corsair 5557	Shire
495	Cresap Bros	Altoona	Stanley 40944	Percheron
503	Jas. A. Sage	Ankeny	Oku 7984 (22654)	Shire
594	Jas. Watt	Des Moines	Hail Cloud 23605	Trotter
517	Saylor Horse Co	Ankeny	Due d' Aumale 22567 (43506)	Percheron
570	J. W. Day	Des Moines	Miley Boy 34332	Trotter
633	J. N. McClellan	Des Moines	Vinicus 33800	Trotter
639	R. T. Mally	Berwick	Sumner G. 32362	Trotter
675	Farmers' Belgian Horse Co	Mitchellville	San Souci de Bett (29460)	Belgian
676	Beaver Valley Horse Co	Grimes	Fourire 34325 (46288)	Percheron
632	L. J. Ringgenberger	Sheldahl	Don A. Hail 43433	Trotter
606	C. L. Weisner	Grimes	Fritz 15748 (24044)	Percheron
465	N. Ware	Runnells	Iowa 11724	French Draft
763	Walter Ferguson	Runnells	Keota Still 10190	French Draft
798	Tom James	Des Moines	Barondale 20184	Trotter
1119	W. J. Crawford	Des Moines	Gold Miner 30411	Trotter
1173	N. J. Otto	Des Moines	Nabuko 27536 (44298)	Percheron
1227	N. W. Murrow	Mitchellville	King Milord 33762	Percheron
1317	Big Four Horse Co	Grimes	Tampon 26702 (45561)	Percheron
1321	Poweshiek Percheron Horse Co	Farrar	Carvalho (45130)	Percheron
1462	J. W. Anderson & Son	Des Moines	Birdeer 37105	Trotter
1521	Gust Alf and Otto Engstrom	Sheldahl	Refrigerant 35218 (52501)	Percheron
1573	W. W. Garner	Des Moines	Felix 12021 (12576)	Clydesdale
1616	Henry Wagner	Ankeny	Matchless Junior 5555	Shire
1660	W. W. Garner	Des Moines	Signor 2259 (31806)	Belgian
1663	W. W. Garner	Des Moines	Caesar de Heusden 2256 (29494)	Belgian
1664	W. W. Garner	Des Moines	Dewey 24241	Percheron
1665	W. W. Garner	Des Moines	Daniel 41273 (57922)	Percheron
1666	W. W. Garner	Des Moines	Grovy 41272 (57201)	Percheron
1667	W. W. Garner	Des Moines	Nogentais 41272 (52852)	Percheron
1723	Willard Ferguson	Des Moines	Conro 25761	Percheron
1765	A. J. Good	Ankeny	British Ensign III 7979 (22160)	Shire
1168	G. W. Smith	Altoona	Midnight 31057	Percheron
729	W. W. Garner	Des Moines	Merry Legs 8309	Shire
2145	Ivy Horse Co	Altoona	Montmirail 31784 (44304)	Percheron
2403	W. C. St. Clair	Des Moines	Taupin 42878 (56415)	Percheron
271	F. G. Thornton	Altoona	Teddy Lockheart 35772	Trotter
2487	Hunter, Hall & Bachman	Ankeny	Udell 32621	Trotter
2667	C. W. Schaeffer	Mitchellville	Baptiste (10552)	Belgian
2456	A. K. Good	Ankeny	Black Lad II 8681 (23932)	Shire
2575	F. Berkey	Ankeny	Tranquille 41396 (64035)	Percheron
2576	F. Berkey	Ankeny	Manea Loyal 6851 (20686)	Shire
92	N. Bartholomew	Des Moines	Galileo Rex 12347	Trotter
3001	E. A. Elliott	Des Moines	Wilbrino Boy 37459	Trotter
3186	C. I. Stanton	Valley Junction	Ieson U. 0917	Trotter
3265	F. M. Winfrey	Runnels	Silver Duke 15774	French Draft

POLK COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
3374	G. W. Grigsby	Sheldahl	Martin de Hazior 2445 (31862)	Belgian
3398	F. C. Bellairs	Valley Junction	Meadowthorpe 37055	Trotter
3400	W. W. Garner	Des Moines	Vimoutiers 41763 (60933)	Percheron

POTTAWATTAMIE COUNTY.

149	M. C. Robinson	Avoca	De Wet 34618	Trotter
449	Chas. Kingman	Avoca	Reno 11014	French Draft
259	Neola Bomer Belgian Horse Co	Neola	Iowa 1404 (25326)	Belgian
258	Wm. Casson	Neola	Major II 22922	Percheron
242	Underwood Belgian Horse Co	Underwood	Perfait de Hantes 1405 (20334)	Belgian
588	Albert Petersen	Hancock	Arton 32308 (44548)	Percheron
1147	T. H. Broughton & A. J. Stuart	Walnut	Prince of Belges 1818	Belgian
627	Macedonia Percheron Horse Co	Macedonia	Raspail 33970 (48599)	Percheron
714	C. S. Price	Macedonia	Beacon 22448	Percheron
771	Ben Gress	Walnut	Bonny Tom II 6828 (18544)	Shire
849	T. S. Jolliff	Avoca	Red Chaser	Trotter
850	T. S. Jolliff	Avoca	Tryner 27776	Trotter
841	Jos. Jungferman	Neola	Nailstone Rare Lad 6317	Shire
835	L. Sheets	Carson	Jack E. 42191	Trotter
834	L. Sheets	Carson	Morgan Whips 4300	Morgan
833	L. Sheets	Carson	Nimble 8536	Trotter
1094	H. E. Patterson	Avoca	Titan 2457	French Coach
1093	H. E. Patterson	Avoca	Fil-der-fer 25308 (44716)	Percheron
1007	York Percheron Horse Co	Minden	Championat 34512 (48681)	Percheron
1148	Edward Falk	Oakland	Pride of Oakland 0713	Trotter
1177	Ira Nixen	Council Bluffs	Lieutenant 30582 (45354)	Percheron
1243	E. Morrison	Neola	Villars 28079 (4883)	Percheron
1365	L. Kastner, Jr	Council Bluffs	Brockway 11314	French Draft
1604	Burke Bros	Walnut	Rock Rover 1604	Shire
1738	Wm. Converse	Hancock	General Grant 4202	Clydesdale
1975	Leonard Everett	Council Bluffs	Banker 11384	French Draft
2280	Harrison Smith	Avoca	Teddy M. 38001	Trotter
2328	Stageman Bros	Council Bluffs	Nero 34885	Percheron
2365	S. P. White	Oakland	Samson 7967	Shire
2500	Wm. Shaw	Council Bluffs	Lieutenant 30582 (45345)	Percheron
269	C. P. Wasser & G. B. McClellan	Avoca	Lord Linton 12690	French Draft
2452	E. T. Waterman	Council Bluffs	Caffrey 2nd 5288	Morgan
2534	Treynor Imp. Percheron Horse Co	Silver City	Romeo (48568)	Percheron
2717	Hancock Horse Co	Hancock	Lacheur 35512 (48474)	Percheron
2724	H. J. Giese	Bentley	Helmuth 1299	German Coach
2750	Prairie Rose Horse Co	Walnut	Chenimeau 31446 (48510)	Percheron
2775	Lew Brown	Avoca	Ring Rathbun 35429	Trotter
2831	J. O. Frizzell	Oakland	Togo 46093	Percheron
2751	Prairie Rose Horse Co	Walnut	Asman 1977 (1095)	German Coach
2899	Tom Cavanaugh	Neola	Fortune Hunter 20394	Percheron
2925	Botna Valley Horse Co	Carson	Coeur de Lion 26708 (46414)	Percheron
2929	Underwood Belgian Horse Co	Underwood	Perfait De Hautes 1405 (20334)	Belgian
744	Rassmussen & Pruess	Walnut	Royal Defender 9692	Clydesdale
3055	H. A. Ellerbeck	Council Bluffs	Martin 33362	Percheron
3067	Henry Parker	Macedonia	Dawson 27937	Percheron
3245	W. A. Lewis	Council Bluffs	Remdlesham Politician (3159)	Suffolk

POTTAWATTAMIE COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
393	Montezuma Horse Co	Montezuma	Paulus 22673 (43384)	Percheron
382	J. L. McIllrath	Hartwick	Malvern Glory 5405 (16799)	Shire
351	Jos. C. Johnston	Deep River	Caesar 27547 (47055)	Percheron
263	Guernsey Draft Horse Co	Guernsey	King Harold 2nd 6685	Shire
262	Guernsey Draft Horse Co	Guernsey	Sans Souci 28972 (44260)	Percheron
183	Dr. A. E. Anger	Brooklyn	Doc Allerton 42167	Trotter
340	P. F. Smith	Montezuma	Montezuma Chief 35503	Trotter
338	P. F. Smith	Montezuma	Morgan Panic 5003	Morgan
315	D. T. Gorsuch	Montezuma	Iowa Boy 10533	Clydesdale
314	Thompson Miller	Brooklyn	Flambeau (26400)	Belgian
311	J. B. Gorsuch	Montezuma	Bristolin (25356)	Belgian
470	C. M. Adams	Grinnell	Thiers 27070 (45769)	Percheron
466	C. M. Adams	Grinnell	Charmant 25211 (42404)	Percheron
425	A. C. Thompson & Son	Grinnell	Chinois 30036	Belgian
577	Miles & Evans	Grinnell	Henry Ward Beecher 3036	Shetland Pony
590	A. Bramer	Guernsey	Creston Victor 5759	Shire
634	Barnes City Horse Co	Montezuma	Regional 26083 (45302)	Percheron
685	W. H. Murphy	Hartwick	Vindex 4671	Morgan
622	M. Winchell	Malcom	Emilien 12046 (13396)	Percheron
404	E. J. Hadley	Grinnell	Ellerslie Russell 38817	Trotter
855	H. J. Schmidt	Grinnell	Jamin 1060 (12016)	Belgian
913	M. A. Latham	Searsboro	Keota Boatman 5805	Shire
1036	E. J. Korns	Hartwick	Princewick 2nd 12139	Clydesdale
1037	E. J. Korns	Hartwick	Handsome Prince II 9486	Clydesdale
1167	B. B. Cransten	Deep River	Lillie's Prince 11085	Clydesdale
1205	W. F. Blain	Montezuma	Favor 20633	Percheron
1280	Ewart Belgian Horse Co	Ewart	Carol (29756)	Belgian
1473	J. W. Johnson	Deep River	Stuntney Beckett (23740)	Shire
2244	Sugar Creek Percheron Horse Co	Searsboro	Bazard 27082 (45284)	Percheron
438	Frank Schultz	Hartwick	Pompon II 16290	Belgian
2238	J. L. McIllraith	Hartwick	Japonias 27985 (46830)	Percheron
1501	M. L. Latham & Sons	Searsboro	Blocky 14550	French Draft
2571	Sheridan Belgian Horse Co	Grinnell	Porte Drapeau 945 (15818)	Belgian
2732	S. G. Ingraham	Montezuma	Rendlesham Cromwell 252 (333)	Suffolk
2857	Fred Reed	Brooklyn	Matchless 5478	Shire
3056	Zack Hull	Brooklyn	Darby 33944	Percheron
510	A. Halstead	Grinnell	Lord Roberts 7037	Shire
1035	J. L. McIllrath	Hartwick	Princewick 12138	Clydesdale
3200	L. E. Anthony	Malcom	Prince Consort 8455	Clydesdale

RINGGOLD COUNTY.

280	W. F. Blackman	Delphos	Poppennheim 3315	German Coach
281	W. F. Blackman	Delphos	Ad Leitem 35931	Trotter
282	W. F. Blackman	Delphos	Fais (23048)	Belgian Draft
34	E. S. Botleman	Diagonal	Creston Boy 38733	Trotter
643	J. A. Bliss	Diagonal	D. J. Count 6969	Shire
801	M. Mariner	Tingley	Victor Morgan 4854	Morgan
803	J. I. Morrison & Co	Tingley	Capitola 29721	Percheron
340	J. P. Drake	Mount Ayr	Essort (47601) 45473	Percheron
802	M. Mariner	Tingley	Agate 26434	Percheron
800	Tingley Shire Horse Co	Tingley	Toft Right Stamp 5704	Shire
1183	Claude Bowen	Mount Ayr	Leader 35373	Percheron
1184	Claude Bowen	Mount Ayr	Uncle John 16266	Trotter
1330	H. I. Brent	Diagonal	Fred 30652	Percheron
1319	C. E. Bliss	Diagonal	Mocking Dare 36411	Trotter
1320	C. E. Bliss	Diagonal	Captain Dewey I. 30607	Trotter

RINGGOLD COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1418	M. G. Parr	Maloy	Biron 24813 (44622)	Percheron
1419	M. C. Parr	Maloy	Golden Prince 9806	Clydesdale
1516	L. D. Norry	Redding	Julliard 27525	Percheron
1545	Kellerton Horse Co	Kellerton	Black Duke 27988	Percheron
1588	Allston Draft Horse Co	Ellston	Papillon 27488 (48264)	Percheron
1583	Washington Twp. Horse Co	Diagonal	Reveur (46169)	Percheron
1601	A. S. Blauer	Mount Ayr	Hobson 10346	French Draft
1701	J. D. Blauer	Tingley	Imperial Duke 11925	French Draft
1724	G. F. Long	Mount Ayr	Marquis Dewey 11047	Clydesdale
2229	D. H. Pike	Diagonal	Becca 47442 (46911)	Percheron
2279	The Kellerton Horse Co	Kellerton	MacQueen's Model 10603	Clydesdale
2318	Gus Winterschied	Tingley	Baronet Dunbar 10522	Clydesdale
2361	J. & A. W. Michael	Benton	Montague 30682	Percheron
2362	G. W. Swartwood	Diagonal	Dewey 10345	French Draft
2615	J. H. & C. M. Waugh	Redding	Mack 14465	French Draft
2669	Tingley Percheron Horse Co	Ellston	Lutin 24452 (44678)	Percheron
2467	D. M. Lane	Diagonal	Morning Star 11925	Percheron
2469	L. A. Duff	Diagonal	Rendelsham Colonial 261 (3174)	Suffolk
2548	Wm. Reasoner	Beaconsfield	Cinturier 31110 (47506)	Percheron
2562	Lotts Creek Percheron Horse Co	Mount Ayr	Freluquet 32429 (48745)	Percheron
2696	L. D. Norris	Redding	Grueze 45864	Percheron
2797	W. F. Stetzler	Kellerton	Nutseal 38820	Trotter
2951	Kellerton Shire Horse Co	Kellerton	Moors Commander 6758 (18220)	Shire
1974	W. F. Blackman	Delphos	Daniel Boone 10606	French Draft
3085	W. F. Blackman	Delphos	Alto 28227	Percheron
1615	C. F. Miller	Diagonal	Stuntney Jonadab 6739 (Vol. 24)	Shire
3187	Bliss Bros	Diagonal	Countness Right Stamp 9044	Shire
3240	Wm. Tapp	Tingley	St. Clare 43148	Percheron

SAC COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
166	Neal Hoskins	Sac City	Taupin 31611 (48997)	Percheron
775	C. Christiansen	Early	Bolie 8313	Shire
781	Wall Lake Horse Co	Wall Lake	Joubert De Vynckt 2165 (33306)	Belgian
825	B. F. M. Rose	Auburn	Couquet V. 11073 (14186)	Percheron
829	W. C. Abney	Auburn	Brilliant II 1373	Belgian
874	H. H. Mead	Early	McBurney 23098	Trotter
1063	Odebolt Horse Co	Odebolt	Hector 2005 (30020)	Belgian
1152	Joel Johnson	Wall Lake	Brilliant 23677	Percheron
1180	O. A. C. Horse Co	Odebolt	Colenso de Jandre 1467 (25376)	Belgian
1373	W. C. Abney	Auburn	Chitorney 34369	Trotter
1313	Jerry Bell	Early	Frasier 10812	Clydesdale
1514	W. A. Helsell	Odebolt	Observation 38614	Trotter
1523	W. T. Scott	Early	Cornepic 1144 (17878)	Belgian
1524	W. T. Scott	Early	Rosier 13678 (53863)	Percheron
1582	N. A. Hanken	Sac City	Rosa's Prince 11082	French Draft
1600	Wm. Schade	Odebolt	Prince 2342	Clydesdale
1671	A. P. Jacobsen	Lake View	Warbler 3026 (10716)	Percheron
1715	J. P. Goreham	Odebolt	King of Plainfield 9655 (44547)	Shire
1747	Boyer Valley Horse Co	Early	Beaumont 31365 (48667)	French Draft Percheron

STORY COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1446	La Fayette Percheron Horse Co	Gilbert Station	Cacatoes 31128 (45723)	Percheron
1688	M. J. Nelson	Cambridge	Blaisdon Brilliant 7903 (21147)	Shire
1774	Fred Holtby	Collins	Melamere B. P. 6510 (18671)	Shire
1805	H. C. Davis	Ames	Soliman 21281 (43227)	Percheron
2120	J. H. Boyd	Ames	Delamere B. P. 6510 (18671)	Shire
2183	S. J. B. Johnson	Ames	M Kazek 39781	Trotter
2142	Zearing Belgian Horse Co	Zearing	Demblon 1152 (13394)	Belgian
2392	Edgar Mackey	Story City	Paulin II (15969)	Belgian
2396	N. A. Stimson	Zearing	Alexander 41415	Percheron
2207	C. A. Jerdeman	Story City	Mastodonte 2597 (Vol. 13, p 292)	Belgian
2640	Iowa State College	Ames	Etradegant 40553 (55321)	Percheron
2641	Iowa State College	Ames	Refiner 12116	Clydesdale
2693	H. C. Davis	Ames	Babe 15358	French Draft
2694	H. C. Davis	Ames	Jolif 46154 (60214)	Percheron
2537	H. C. Lowrey	Nevada	Mazeppa 41840	Percheron
2982	J. H. Boyd	Ames	Cartouche 42317	Percheron
3152	F. C. Gearhart	Ames	Royal 5354	Morgan
3164	Hougen & Co	McCallsburg	Hercules 27268	Percheron

TAMA COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
399	W. F. Nation	Buckingham	Tedy R. 14181	French Draft
383	J. L. Reedy	Garwin	Wentz 31735	Trotter
147	Geo. Niemand	Traer	Teddy R. 23923	Percheron
133	Jos. E. Axon	Traer	Roan Charlie 11440	Clydesdale
116	W. A. Speer	Buckingham	Timonnier 30406 (52771)	Percheron
232	Jas. Morgan	Traer	Ailsa's Pride 11443	Clydesdale
231	Jas. Morgan	Traer	Prince Archer 11458	Clydesdale
302	Z. T. Moore	Traer	Dewey Day 34691	Trotter
49	Geo. Walz	Tama	Cataline 40918	Percheron
30	Toledo Draft Horse Co	Toledo	Philibert 40402 (51574)	Percheron
536	I. D. Magowan	Tama	Lewis Templeman 32809	Trotter
537	I. O. Magowan	Tama	Cedric 7185	Shire
31	Toledo Draft Horse Co	Toledo	T. H. M. 38691	Trotter
546	Jno. M. Bicket	Traer	Newton Quality 6919	Shire
655	Hildebrand Bros	Gladbrook	Ailsa Again 10374	Clydesdale
698	H. W. Rueppel	Dysart	Rantanglar 6005	French Draft
619	Chas. Vanbel	Dysart	Otter Bank 12310	Clydesdale
721	Congo Belgian Horse Co	Chelsea	Congo (21578)	Belgian
728	Traer Percheron Horse Co	Traer	Introuvable 24765 (46658)	Percheron
1018	Jno. Tiedje	Gladbrook	Roseau 24547 (44327)	Percheron
891	G. J. Monroe	Dysart	Brown Trippe 33669	Trotter
873	Jacob Ulstad	Dysart	Contest Day 43340	Trotter
872	A. R. Wilson	Traer	Judge Lockheart 43416	Trotter
1126	T. A. Green	Toledo	Trappy A. G. 43523	Trotter
1294	J. W. Sackett	Clutier	Black King 29947	Percheron
1295	J. W. Sackett	Clutier	Gilbert 12454	French Draft
1520	J. L. Reedy	Garwin	Silver King 59281	Percheron
1594	Peter Grenewalt	Elberon	Printemps 34022 (51524)	Percheron
1595	Peter Grenewalt	Elberon	Riverside 25580	Percheron
1717	Geo. Filer	Garwin	Allendale 28588	Percheron
1763	Clutier Horse Co	Clutier	Colin 26156	Percheron
1812	Frank Landt	Gladbrook	Charming Gift 10079 (11006)	Clydesdale
2325	W. H. Sprole	Traer	Deacon 45965	Percheron
2357	Joe Krezek	Clutier	Bayard 20135	Percheron
2405	Jacob Ulstad	Dysart	Vyzantum 37703	Trotter
2406	G. W. Mowers	Dysart	Henry G. M. 37552	Trotter
2409	Geo. Filer	Garwin	Patripue 40790	Percheron
2450	Hildebrand Bros	Gladbrook	Major Luy 2310 (29320)	Belgian

TAMA COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2898	Henry Voege	Berlin	Bury Valiant 8870 (24107)	Shire
2941	Montour Percheron Horse Co.	Montour	Kabyle 24761 (44167)	Percheron
3039	H. L. M. & N. C. Bruner	Toledo	Frodoard 47115 (61993)	Percheron
3168	Dysart Horse Co.	Dysart	Iphis 20047	Percheron
3193	Percheron Horse Co.	Dysart	Crux 29266 (45146)	Percheron
3198	E. F. Brennen	Dysart	Forfait's Best Son 23338	Percheron
3199	E. F. Brennen	Dysart	Richard 23343	Percheron
3237	J. G. Poshaisky & E. J. Stayaskal	Toledo	Raven Nation 12655	French Draft

TAYLOR COUNTY.

377	Frank Stanley	Gravity	Compeer 9649	Clydesdale
376	W. H. Pfander	Sharpsburg	Lucky Lad 40471	Percheron
365	E. T. Philpott	Sharpsburg	Bedford 25620	Percheron
364	E. T. Philpott	Sharpsburg	Blucher 35377	Percheron
350	Bedford Shire Horse Co	Bedford	Tatton Navigator 6990 (19170)	Shire
349	J. S. Hanshaw	Bedford	Brilliant 349	Percheron
345	G. W. Page	Lenox	Chasseur 32831 (46217)	Percheron
344	G. W. Page	Lenox	Mingo Chief 0666	Trotter
343	H. S. Straight	Bedford	Castellan 40144 (52911)	Percheron
305	E. W. Hardenbrook	Bedford	Herschel Rysdyke 31325	Trotter
325	J. S. Stimson	Gravity	Huxwood 38735	Trotter
306	Jno. Curphey	Lenox	Iroquois 34600	Percheron
356	W. H. Payton	Bedford	Soudeur 28688 (25700)	Percheron
464	Thos. McClintock	Lenox	Sultan 33195	Percheron
519	Grove Twp. Horse Co.	Lenox	Lime Kiln Tom 7595 (21599)	Shire
33	Newton Rhoades	Lenox	Ernst 41867 (57131)	Percheron
20	Warren O'Dell	Gravity	Ottoman Chief Jr. 34343	Trotter
492	Dr. Wm. Readhead	Lenox	Ax Dowell 40369	Trotter
491	Dr. Wm. Readhead	Lenox	Exbird 39999	Trotter
586	J. J. Knox	Clearfield	General Scott 30497	Percheron
584	G. D. Hazen	Bedford	King of All 30169	Percheron
427	Charles Bean	New Market	Denain 32428 (47543)	Percheron
683	J. M. Long	Lenox	Antrione 43073	Trotter
613	G. D. Bix	Bedford	Gabels Black Prince 5751	Shire
745	State Road Horse Co	Bedford	Langton Napoleon 5749 (18140)	Shire
750	Clark Armstrong	Lenox	King Purquois 45053	Percheron
749	Clark Armstrong	Lenox	Bob Orr 25424	Trotter
760	W. W. Kirby	Gravity	Major Genese 1250 (18802)	Belgian
808	The Morning Star Percheron Horse Co	Bedford	Rudolph 17323	Percheron
852	Wise, Ray, Miller Horse Co.	New Market	Picador 27854 (46930)	Percheron
859	John Curphey	Lenox	Sir Clinton 45309	Percheron
843	E. T. Philpott	Sharpsburg	Stanley 27743	Percheron
844	E. T. Philpott	Sharpsburg	Comet II 40520	Percheron
845	E. T. Philpott	Sharpsburg	Alfonso 40770	Percheron
846	E. T. Philpott	Sharpsburg	Lamont 40607	Percheron
847	E. T. Philpott	Sharpsburg	Milo 40771	Percheron
848	E. T. Philpott	Sharpsburg	Laureat 32670 (46176)	Percheron
1086	Pierce Wheeler	Gravity	Keota Captor 21661	Percheron
1097	J. A. Hamilton	Bedford	Lord Bancroft 7040	Shire
1006	Phil Slattery	Lenox	Kid McCloy 9228	Clydesdale
993	S. A. Dowell	Conway	Lafleur De Wortghem (33292)	Belgian
1192	Gravity Draft Horse Co	Gravity	Bonneval 25437 (45405)	Percheron

TAYLOR COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1247	Clearfield Horse Improvement Co	Clearfield	Samory 26551 (43742)	Percheron
1273	J. T. Dunlap	Lenox	Baron Lockhart 9699 (10685)	Clydesdale
1356	E. M. Patton	Clearfield	Chestnut Sprague 35366	Trotter
1338	A. D. Robey	Conway	Sir Hugo 6378 (20028)	Shire
1375	C. H. Chamberlain	Bedford	Humbert de Pomm 2052 (23192)	Belgian
1431	J. A. Hamilton	Bedford	Gold-Dust 50237	Percheron
1487	E. E. Leighton	New Market	Lee-Dallas 50239	Percheron
1534	W. P. Oliver	Lenox	Griton Tom 6390	Shire
1669	Harry Allen	Hopkins, Mo.	Earl of Dunbar 10631	Clydesdale
1710	S. E. Robinson	Conway	Fanfulla 2238 (32794)	Belgian
1761	E. T. Philpott & Co	Sharpsburg	Fauntleroy 41237	Percheron
1762	E. T. Philpott	Sharpsburg	Hiawatha 1762	Percheron
1839	H. N. Ray	Ladoga	Teddy 15097	French Draft
1838	H. N. Ray	Ladoga	Blain 15098	French Draft
2130	Blockton Percheron Horse Co	Blockton	Joubert 25816	Percheron
2150	Blockton Horse Co	Blockton	Jupiter 10848 (921)	French Draft
2285	S. & W. W. Hartzler	Bedford	De Leon 42043	Percheron
2299	Dr. O. T. West	Conway	Homere 42597	Trotter
2499	J. D. Barrans	Clearfield	Stuntney Expectant 5374	Shire
2472	Herbert Peak	Lenox	Norvent Boy 39707	Trotter
2726	M. M. Spurgeon	Bedford	Accorte 14854 (59933) P	French Draft
2772	J. E. Anderson	Conway	Hercule II 920	Belgian
2773	J. E. Anderson	Conway	Joseph 42238	Percheron
2774	J. E. Anderson	Conway	Conway Sully 42240	Percheron
2843	Fine Bros	New Market	Prime Minister 5166	Shire
2308	E. E. Leighton	New Market	Maxime 50658 (59942)	Percheron
2832	Powell & De Haven	Conway	Brave 13679 (60443) P	French Draft
2939	J. N. Nichols	Clearfield	Captain Jinks 11103	French Draft
3124	W. H. Payton	Bedford	Perfection 44731	Percheron
3125	W. H. Payton	Bedford	Pink Paragon 43929	Percheron
2131	W. H. Price	Gravity	Jupiter Jr. 15031	French Draft

UNION COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
386	W. A. McManis	Shannon City	J. W. 11125	French Draft
569	R. C. Holland	Afton	Judge Towner 19419	Trotter
61	Taylor Kilgore	Cromwell	Mongol 42230 (52132)	Percheron
40	R. J. Ross	Cromwell	Creston Royal 4942	Shire
568	A. E. Otis	Afton	Bijou 10839	French Draft
709	A. Latimer Wilson	Creston	Villebon 10529 (14471)	Percheron
710	F. L. Streams	Creston	Plainview Dignity II 6389	Shire
611	C. N. Paulson	Lorimor	Coco 22406	Percheron
610	C. N. Paulson	Lorimor	Gentleman Joe 6181	Shire
416	C. G. Webb	Afton	Lethbridge 7713	Shire
753	Sadler & Brown Bros	Creston	Souverain 41195 (52467)	Percheron
747	C. S. Rex & Son	Creston	Athel 17537	Trotter
762	W. R. Henderson	Afton	Moscow 25509 (42605)	Percheron
799	T. A. Stevenson	Shannon City	Iowa Champion 7286	Shire
856	G. E. Reetz	Cromwell	Redea 4557	Morgan
895	D. J. Gibbons	Cromwell	Ravenwood 8339	Shire
806	D. J. Gibbons	Cromwell	Gibbons Charger 6968	Shire
1053	W. J. Stalcup	Lorimor	Romulus 44892	Percheron
1044	G. W. Stream	Spaulding	Prince of Wales 6725	Shire
1045	E. W. Stream	Spaulding	Jacques 29716	Percheron
1140	S. J. Bayles	Cromwell	Slasher 40401	Percheron
1005	J. H. Davis	Shannon City	Doctor Lad 26340	Percheron
1139	S. J. Bayles	Cromwell	Banker II 7635	Shire
1260	B. E. Carter	Creston	Grayson 19436	Trotter
1340	E. Fugier	Creston	Senator 41137	Percheron
1341	E. Fugier	Creston	Percheron Chief 41106	Percheron
1342	E. Fugier	Creston	Chestnut Baron 8108	Shire

UNION COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1343	E. Fugier	Creston	Hakes' Prince 5854 (18778)	Shire
804	M. Iams & Co.	Lorimor	Medley Rex 37790	Trotter
1606	A. Waltz	Spaulding	Soham Insurgent 6735 (Vol. 24)	Shire
1605	C. L. Waltz	Spaulding	Stuntney Airlie 8022 (22965)	Shire
1621	G. L. Reed	Kent	Sultan 45435 (48324)	Percheron
1635	C. D. Riggs	Spaulding	Iowa Prince 4841	Morgan
1703	H. Y. Lupher	Lorimor	Prince Albert II 13861	French Draft
1766	G. W. Stream	Spaulding	Modock 41236	Percheron
1798	Grant Hubble	Kent	Lofty Yet 9945	Clydesdale
326	McKinnie Bros	Afton	Bluffer 29717	Percheron
2027	F. L. Stream	Creston	Lucky Lad 8182	Shire
2319	W. R. Wilson	Arispe	Castor 41848 (62526)	Percheron
2320	W. R. Wilson	Arispe	Duke of Marlborough 19540	Percheron
1856	H. H. Jeter	Thayer	Boileau 50422 (60614)	Belgian
2484	G. W. Bilbo	Creston	Colonel Beaumont 7998	Shire
2610	Johnny Kilgore	Cromwell	Maroc 41881 (63223)	Percheron
2655	M. E. Thompson	Afton	Custerwood 43445	Trotter
2671	A. T. Worsley & Sons	Kent	Valerien 47985 (58032)	Percheron
2473	J. H. Garrels	Thayer	Lemaire 860	French Coach
2570	Shannon City Percheron Horse Co.	Shannon City	Otts 40387	Percheron
2712	Creston Shire Horse Co	Creston	Plain View Dignity 5550	Shire
2754	A. L. Wilson	Creston	Edward VII 6931 (Vol. 25)	Shire
1052	L. L. Stoner	Afton	Maroc 14130	French Draft
555	David Miller	Spaulding	Bon Ami 4630	Shire
2861	J. J. Thompson	Afton	Greenwood 28150	Trotter
2911	J. H. Garrels	Thayer	Preval 14185	Percheron
2909	Ed Hupp	Afton	Calvin 11535 (20017)	Percheron
2928	E. F. & F. L. Sullivan	Afton	Trumans Surprise 7342	Shire
2953	G. W. Bilbo	Creston	Keck 6575	Shire
2952	G. W. Bilbo	Creston	Crown Prince 8000	Shire
2960	L. M. Cherrington	Creston	Prime 2415 (36859)	Belgian
2989	F. L. Stream	Creston	Sport 13731	French Draft
3128	Gale McCall	Lorimor	Major D' Ob 2531 (Vol. 8, 480)	Belgian
3157	G. S. Reetz	Cromwell	Sostene 50865 (62597)	Percheron

VAN BUREN COUNTY.

457	J. V. Clark	Birmingham	Blyth Farmers Lad 5389 (16003)	Shire
458	J. V. Clark	Birmingham	Rudolf 70 (1246)	Oldenburg Co'ch
114	T. L. Simmons & Son	Bonaparte	Esnault 34769	Percheron
155	A. A. Bonner	Keosauqua	Jamais 25583 (43815)	Percheron
197	E. E. Keck	Stockport	Roseau 25586 (44296)	French Draft Percheron
256	Jas. W. Rhynas	Stockport	Pepin 35100 (52938)	Percheron
196	E. E. Keck	Stockport	Chartroose 33721 (7803)	Percheron French Draft
479	Wm. Bishop	Milton	Marquis III 33769	Percheron
435	J. H. Stull	Birmingham	Keota-Sawyer 33440	Percheron
792	J. W. Warner	Bentonsport	Mud Creek Bill 10274	Clydesdale
813	J. V. Clark	Birmingham	Masher 8390	Shire
823	S. B. & L. C. Carroll	Selma	Keota-Blaurock 24823	Percheron
824	J. H. Zeitler	Douds-Leando	Chequest Hero 44256	Percheron
1161	L. S. Pickett	Cantril	Cherbourg 25581 (44507)	Percheron
1160	L. S. Pickett	Cantril	Volcan 642 (4052)	Belgian
1468	W. D. Thomas	Douds-Leando	Chanteur 1918 (32820)	Belgian
1469	W. D. Thomas	Douds-Leando	Radis (48708)	Percheron
1541	R. C. Harris	Stockport	Plato 44975	Percheron
1712	F. M. Smith	Stockport	Champ 11570	Clydesdale

VAN BUREN COUNTY—Continued.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1713	F. M. Smith	Stockport	Stockport Dewey 23673	Percheron
1790	T. R. Robertson	Farmington	Chopin 44113 (57667)	Percheron
1210	J. E. McKeehan	Farmington	Chief Coburn 6982	Shire
2111	L. K. Doud	Douds-Leando	Panama 41618	Percheron
2329	P. D. Holloway	Milton	Omar C. 42168	Trotter
2395	A. J. Leffler	Stockport	Master Fearless 9484	Clydesdale
2453	R. E. Meek	Bonaparte	Mellier 9993	French Draft
2529	E. D. Prunty	Farmington	Kale 8591	Clydesdale
2530	E. D. Prunty	Farmington	Quenny 24816 (44496)	Percheron
2531	State Line Coach Horse Co	Farmington	Rallien 2480	French Coach
2835	V. F. Newell	Birmingham	Brilliant 15192	French Draft
2836	V. F. Newell	Birmingham	Triton 15195	French Draft
2852	Birmingham Draft Horse Co	Birmingham	Favori II 45574	Percheron
2959	A. F. Haney	Milton	Fernaux 14878	French Draft
2958	A. F. Haney	Milton	Ike Squirrel 1888	Saddle Horse

WAPELLO COUNTY.

289	Jay Bros	Blakesburg	Facteur 27139 (46785)	Percheron
288	Jay Bros	Blakesburg	Belleau 24553 (43513)	Percheron
84	O. S. Miller	Blakesburg	Waldo 901	Belgian
605	P. E. Leinhauser	Ottumwa	Marx 21919	Percheron
604	P. E. Leinhauser	Ottumwa	Senator Ballingall 31895	Trotter
603	P. E. Leinhauser	Ottumwa	Ouse Wonder 7944	Shire
796	Jas. A. Miller	Agency	Assuerus 12860	French Draft
976	L. C. Hendershot	Ottumwa	Red Allerio 45423	Trotter
1271	J. H. Kepler	Kirkville	Transvaal 23199 (44612)	Percheron
1822	W. S. Maurice	Ottumwa	Cyprien 28736 (48448)	Percheron
2260	T. F. & W. C. Gonterman	Eldon	Uruguay (48765) 48009	Percheron
1722	W. S. Maurice	Ottumwa	John 32039	Percheron
1574	Village Creek Horse Co	Ottumwa	Captor 12027 (12078)	Clydesdale
2816	C. E. Moore	Eddyville	Keota Standard 27698	Percheron
2873	E. L. Packwood	Ottumwa	Shade Baron 40648	Trotter
2947	E. M. Holmes	Eddyville	Brilliant 50218 (59668)	Percheron
3123	H. Woods	Eldon	Onslow 41973	Trotter

WARREN COUNTY.

245	W. O. Romine & W. J. Shigley	New Virginia	Beaumont Standard 6080 (11758)	Shire
16	Oscar Hunt	Carlisle	Le Blanco II 12431	French Draft
22	J. A. Mason	Carlisle	Blue Box 39786	Trotter
8	F. W. Smith	Winterset	Aeritonian 32506	Trotter
552	E. F. Keeney	Carlisle	Fuschia 25181 (43795)	Percheron
521	H. E. Hopper	Indianola	Marengo 41408	Percheron
475	J. H. Simmerman	Indianola	Arthur 10059	French Draft
699	E. D. Spencer	Milo	Questeur 10149	French Draft
704	Henry Horse Co	Carlisle	Romeo 29519 (44986)	Percheron
421	Alexander & Wheeler	Prole	Penneloz 54568	Percheron
975	St. Mary's Percheron Horse Co	St. Marys	Ecclier 33959 (48753)	Percheron
1077	Taggart & Son	New Virginia	Illinois II 5536	Shire
1076	Taggart & Son	New Virginia	Keota-Carnot 1469	French Coach
1075	Taggart & Son	New Virginia	Waterloo 50212	Percheron
1069	C. E. Read	New Virginia	Edward VII 6931	Shire
1033	Chris. Schuldt	Norwalk	Port Drapeau 1066 (21590)	Belgian
1259	J. H. Barnett & Son	Indianola	Teddy 34678	Percheron
1258	J. H. Barnett & Son	Indianola	What You Like 29161	Percheron
1291	H. B. Flesher	Liberty Center	Brillant 10289 (6427)	Percheron French Draft
1290	H. B. Flesher	Liberty Center	Solide 21454 (43346)	Percheron

WARREN COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
1289	H. B. Flesher	Liberty Center	Lenain 3966	Shire
1288	H. B. Flesher	Liberty Center	Sampson 34732	Percheron
1300	P. D. Mason	Lacona	Banker 6782	Shire
1301	Warren County Horse Co	Indianola	Avalanch 10026	French Coach
1302	Warren County Horse Co	Indianola	Admiral 24504 (44658)	Percheron
1459	H. E. Hopper	Indianola	Africander (Vol. 23)	Shire
1440	F. O. Nutting & Son	Indianola	Rex 41887	Percheron
1441	F. O. Nutting & Son	Indianola	Gladitor's Pride 43873	Percheron
1442	F. O. Nutting & Son	Indianola	Black Dandy 40772	Percheron
1444	F. O. Nutting & Son	Indianola	Dewey's Image 43150	Percheron
1652	J. H. Barnett & Son	Indianola	Simpson Boy 34681	Percheron
1653	J. H. Barnett & Son	Indianola	Brilliant 45630	Percheron
1443	I. W. Thomas	Norwalk	Coco 35856	Percheron
2089	T. G. McCoy	Indianola	Admiral Togo 43076	Percheron
2091	T. G. McCoy	Indianola	Konwood Chief 34680	Percheron
2147	H. E. Hopper	Indianola	Better Yet 43995	Trotter
2148	H. E. Hopper	Indianola	Perfectum 44143	Trotter
2289	De Gens Bros. & Von Dusseldurp Bros	Pella	Keota-Jabez 44756	Percheron
2501	W. T. Sinnard	Carlisle	Keota-Burnett 33461	Percheron
2611	E. T. Keeney	Carlisle	Black Joe 35854	Percheron
2532	Taggart & Son	New Virginia	Joe Bailey II 8393	Shire
2533	Taggart & Son	New Virginia	Kruger 26314	Percheron
2563	P. H. Hester	Indianola	Robert Terton 37182	Trotter
1662	Churchville Horse Co	Churchville	Mirliton 2258 (Vol. 12)	Belgian
1794	Cumming Horse Co	Cumming	Androcles 41274 (59473)	Percheron
2832	Social Plains Horse Co	Indianola	Grincheur 2832	Percheron
2834	W. I. Shetterly	St. Charles	Napoleon 15565	French Draft
2985	Lacona Horse Co	Lacona	Brisefer 28432 (45431)	Percheron
3037	E. M. Lewis	Norwalk	Joe Cedric 40861	Trotter
3172	L. C. Barnett & Co	Indianola	General 43077	Percheron
3173	L. C. Barnett & Co	Indianola	Admiral Jr. 48129	Percheron
3174	L. C. Barnett & Co	Indianola	Lad 48130	Percheron
3175	L. C. Barnett & Co	Indianola	French Lad 15717	French Draft

WASHINGTON COUNTY.

198	M. M. Kempf	Kalona	Norm 13155	French Draft
222	W. R. Bonham	Kalona	Why Not II 7186 (21027)	Shire
1059	J. E. Elgar	Noble	Little Plumb 40087	Trotter
1058	J. E. Elgar	Noble	Big Cinnamen 39090	Trotter
1047	E. M. Smith	Crawfordsville	Orageux 26110 (44842)	Percheron
1111	W. C. White	Ainsworth	Mithridate 20535 (35918)	Percheron
1110	W. C. White	Ainsworth	Conward 33890	Trotter
1113	W. C. White	Ainsworth	Albert Sidney Johnston 42345	Percheron
112	W. C. White	Ainsworth	Black Prince 4207	Shire
1159	Chapel Bros	Ainsworth	Kadour 24767 (46672)	Percheron
1158	Chapel Bros	Ainsworth	Frenchman 499	French Draft
1157	Chapel Bros	Ainsworth	General Washington 1475	Saddle Horse
1182	Jno. Cherryholmes	Crawfordsville	Roscoe 13031	French Draft
1327	A. P. Hayes	Washington	Ganzoo 17645	Trotter
1495	C. C. Erude	Wellman	Keota-Arthur 5796	Shire
1806	The Egypt Horse Co	Washington	Parfait 40031 (42295)	Percheron
1993	B. J. Shetler	Kalona	Kalona Boy 38259	Trotter

WASHINGTON COUNTY—Continued.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
2006	C. E. Hershberger	Wellman	Young Rapin 14543	French Draft
2035	Leichty & Conrad	Noble	Guerrero 46188 (60811)	Percheron
2036	Leichty & Conrad	Noble	Prince John II 6137 (19032)	Shire
2092	R. H. Leeper	Noble	Eugene 41566	Percheron
2093	R. H. Leeper	Noble	Strubby Fear None 7573 (20935)	Shire
2094	R. H. Leeper	Noble	Congolias 1921 (29634)	Belgian
2210	J. B. Spencer	Ainsworth	Satisfait 46048 (63380)	Percheron
2417	C. J. Winter	Washington	Ardent 46151 (58821)	Percheron
2474	D. W. Martin	Ainsworth	Duncan 20584	Percheron
2512	T. E. Johnson	Washington	Lavron 28466	Trotter
2525	B. J. Oyer	Noble	Prince Monarch 40629	Percheron
2632	D. Rittenhouse & Son	Washington	Marcellus 46075	Percheron
2656	E. E. Norman	Wellman	Roy N. 43477	Trotter
2590	E. E. Embe & Chas. Gabriel	Wellman	Keota-Jacob 7789	Shire
2591	E. E. Embe & Chas. Gabriel	Wellman	Keota-Sargent 8270	Shire
2728	C. J. Winter	Washington	Lake Lancer 8785 (20622)	Shire
2737	J. C. Swift	Washington	Dandy Dan 21508	Trotter
2874	V. F. Schnoebelen	Riverside	Keota-Pansey 4972	Shire
2917	Wentworth & McClelland	Brighton	All Here 9248	French Draft
2918	Wentworth & McClelland	Brighton	Waldo 13323	French Draft
2919	Wentworth & McClelland	Brighton	Gabels' Champion 6132 (18028)	Shire
2920	Wentworth & McClelland	Brighton	Rodomont 22624 (34006)	Percheron
3119	E. D. Hershberger	Kalona	King 14456	French Draft

WAYNE COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
441	A. F. Place	Humeston	Mambrino Kirkwood 30703	Trotter
500	T. A. Toliver	Clio	Ralph 6323	Shire
442	A. F. Place	Humeston	Columbus 11096	French Draft
443	A. F. Place	Humeston	Spark IV 7147 (19136)	Shire
444	A. F. Place	Humeston	Romulus 8851	French Draft
507	Clay Richman Horse Co	Humeston	Rosier 28350 (48816)	Percheron
506	Clay - Richman Horse Co	Humeston	Markeaton Primate 6774 (19825)	Shire
689	D. L. McMurray	Corydon	Bismark 10374	French Draft
423	A. H. Palmer	Humeston	Captain Pat 40845	Trotter
756	O. O. Littell	Corydon	Gentleman Joe II 6453	Shire
755	O. O. Littell & Co	Corydon	Judge Halsey 33638	Trotter
754	O. O. Littell & Co	Corydon	Guydirwood 28599	Trotter
748	J. F. Hickman	Humeston	Metropolitan 31753 (47585)	Percheron
788	T. A. C. Miller	Seymour	Harlequin 24591	Percheron
793	W. G. Condit & R. W. Ritchie	Allerton	Colonel Colbert 39077	Trotter
903	Clio Shire Horse Co	Clio	Manea George 6888	Shire
961	Walnut Township Horse Co	Seymour	Dunios 34507 (48527)	Percheron
1123	C. H. Trembly	Lineville	Kingsland Victor 7773 (20615)	Shire
1141	Thos. Allison	Sewal	Carroll 19192	Percheron
1230	C. R. Noble & L. W. Donald	Promise City	Donzelo 500	Belgian
1607	C. M. Fordyce	Powersville, Mo.	Creston Jerry 10997	French Draft
1716	Couchman & Mc-			

WAYNE COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
	Nee	Sewal	Stuntney Hereward 6618 (Vol. 24)	Shire
1813	Confidence Shire Horse Co	Promise City	Sentinell II 6883 (17612)	Shire
2295	Thos. Donald	Corydon	King of Perchie 18793	Percheron
2296	W. D. Wiley	Lineville	Lad 8364	Shire
2297	W. L. Wiley	Lineville	Roxey 8365	Shire
2412	W. D. Wiley	Lineville	Regular 7716	Shire
2637	A. H. Palmer	Humeston	Labourer de Horrues 2530 (34726)	Belgian
2538	Genoa Draft Horse Co	Seymour	Barbancon 29924 (48667)	Percheron
2735	W. P. & T. H. Brown	Promise City	Stuntney Duke (Vol. 25)	Shire
2736	W. P. & T. H. Brown	Promise City	Tona 1470 (25380)	Belgian
2769	Tom Donald	Corydon	Walter 46030 (53154)	Percheron
1234	Otto Thomas	Seymour	Acadia 20265	Percheron
2891	C. T. Harper	Corydon	Creston Tom 4449	Shire
2914	T. H. & W. P. Brown	Promise City	Renzo (Vol. 21)	Hackney

WEBSTER COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
960	Callender Horse Improving Co.	Callender	Attila 26064 (46766)	Percheron
1578	Frank Schill	Harcourt	Bijou de Lant (24954)	Belgian
1188	Knut Trondsen	Callender	Ismael Du Fosteau 1188	Belgian
1457	Roelyn Horse Co	Mooreland	Page 40380 (54733)	Percheron
1503	A. G. Leonard	Dayton	Fred Douglas 17468	Percheron
1531	P. H. Halligan	Moorland	Newton Major 5559	Shire
1751	P. R. Peterson	Fort Dodge	Dreadnaught 8394	Shire
2339	Farnhamville Belgian Horse Co.	Farnhamville	Coco de Falaen 1552 (16044)	Belgian
2703	Richard Cooper	Lehigh	Durantin 22699 (42408)	Percheron
2884	W. Ft. Dodge Horse Co.	Fort Dodge	Black Dan 43111	Percheron
3025	Elkhorn Horse Co	Kalo	Taupin 40711 (56545)	Percheron
322	Jno. McMohn & T. M. Butler	Barnum	Indianola Lad 34682	Percheron

WINNEBAGO COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
123	Jno. Batchelor	Thompson	Nicodeme 31288 (46297)	Percheron
139	Johnston Bros	Buffalo Center	Forfait III 26479	Percheron
140	Johnston Bros	Buffalo Center	Red Payne 37596	Trotter
331	Joice Horse Co	Lake Mills	Bardon 46504	Percheron
472	Sorn Olsen & Moe Bros	Stacyville	Starr Brilliant 22480	Percheron
1251	C. E. Holcomb	Buffalo Center	Velo 31524 (47571)	Percheron
1250	C. E. Holcomb	Buffalo Center	Brilliant 27213	Percheron
2115	C. E. Holcomb	Buffalo Center	Victor 46937	Percheron
2116	C. E. Holcomb	Buffalo Center	Vigo 46936	Percheron
2513	R. B. Young	Buffalo Center	Superbe 42820 (60762)	Percheron
3215	Skiles Core	Forest City	Major Bernard 18561	Percheron
3216	Core Bros	Forest City	Bernard II 42096	Percheron
3195	Johnston Bros	Buffalo Center	Eglantier 41660 (48876)	Percheron
3196	Johnston Bros	Buffalo Center	Archiduc 2522 (Vol. 13, p. 543)	Belgian

WINNISHIEK COUNTY.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
428	I. N. Reed	Burr Oak	Alger 35212 (52492)	Percheron
172	Bloomfield Belgian Draft Horse Co	Castalia	Noe (25532)	Belgian
117	M. E. Marsh	Burr Oak	Mark Hanna 1070	Belgian
111	Percheron Horse Co	Locust	Frondeur 29894 (46118)	Percheron
144	Franklin Draft Horse Co	Decorah	Maretiaux 1380 (25292)	Belgian
255	Jacob Headington	Decorah	Major Pilot 7171	Shire
229	B. O. Bahken	Decorah	Galopin (54336)	Percheron
334	Belgian Draft Horse Co	Decorah	Maurisse (25500)	Belgian
41	E. J. Curtin & G. F. Baker	Decorah	Claude Melnotte 33982	Trotter
71	Ossian Percheron Horse Co	Ossian	Galant 24776 (43050)	Percheron
75	Ed Lynnes	Decorah	Jaquot (56946)	Percheron
481	Washington Prairie Breeders' Ass'n	Decorah	Athos 14347	French Draft
612	Decorah Coach Horse Co	Decorah	Pirat 2599	German Coach
750	Hesper Draft Horse Co	Hesper, Minn.	Baladin 42024 (54427)	Percheron
1980	Spillville Percheron Horse Co	Fort Atkinson	Kleber 29581 (44593)	Percheron
2212	Adolph Running	Decorah	Henri 30170	Percheron
2316	Alex Sheggrud	Decorah	The Coupon 35474	Trotter
2949	Henry Steffes	Fort Atkinson	British Flag II 4350	Shire
2965	Burr Oak Belgian Draft Horse Co	Burr Oak	Camin De Ligne 2375 (29356)	Belgian
3176	August Lansing	Ossian	Fancy Roy 10433	Clydesdale
3219	Thos. Floody	Ossian	Paros 15184 (27271)	Percheron

WOODBURY COUNTY.

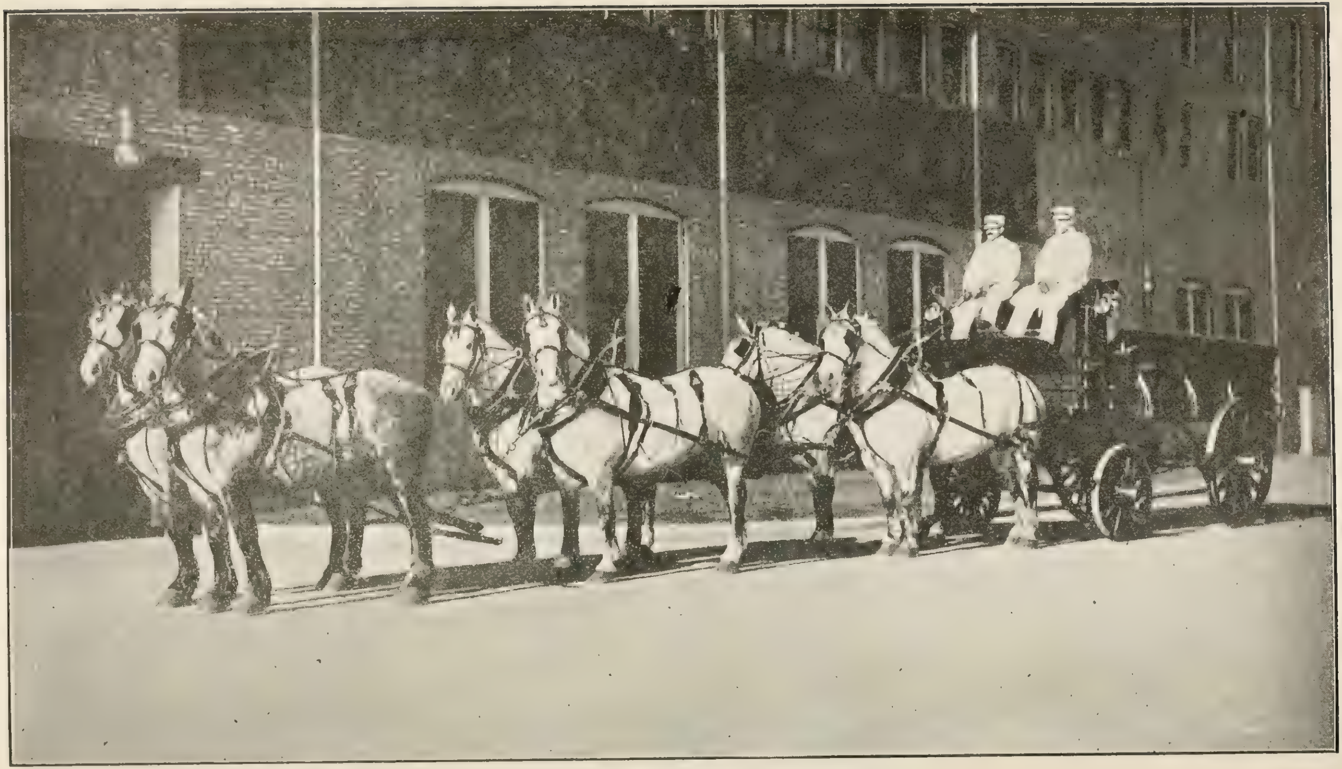
254	August Peterson	Danbury	Carlos (47475)	Percheron
257	D. M. Hamilton	Moville	Echo Chief 2nd 5209	Shire
550	J. A. Clark	Hornick	Lord King 24529	Percheron
723	J. J. Buchan	Pierson	Sultan 10823	French Draft
957	The Lawton-Bronson Percheron Horse Co	Bronson	Vandeix 34437 (46494)	Percheron
1118	A. B. Robinson	Sloan	Guy Caton 29643	Trotter
1244	Jas. Crabb	Bronson	Bruce MacGregor 8553	Clydesdale
1255	J. Onstot & J. Marquart	Lawton	Gazon 42873 (59782)	Percheron
1027	Lum Hollow Horse Co	Smithland	Bayard 31302 (46064)	Percheron
1383	Fred Dyson	Sloan	King 12208	French Draft
1403	W. C. Coon	Anthon	Sampson 9687	French Draft
1509	Joseph Bernard	Anthon	March 12487	French Draft
1535	G. E. Loring	Sioux City	Woodfern 33140	Trotter
1596	Anthony Bower	Correctionville	Mark Hanna 12489	French Draft
2276	August Peterson	Danbury	Cacolet 46152 (55547)	Percheron
2281	J. E. Putnam	Smithland	Domero 33430	Trotter
2224	H. F. Ludwig	Leed's Station	Mystico 14653	French Draft
2526	Moville Percheron Horse Co	Moville	Dominant (46091)	Percheron
2455	H. W. Goreham	Moville	King II 44627	Percheron
2711	Danbury Horse Co	Danbury	Pollux de Caviers (30032)	Belgian
2845	Adam Trieber	Danbury	Odebolt Choice 11758	Clydesdale
2870	R. M. Foster	Correctionville	Wildair 2870	Percheron
2892	J. F. Brooks	Pierson	Oreste 21778 (43544)	Percheron
2967	A. A. Sadler	Correctionville	Bumper 45224	Percheron
2983	O. S. Pixler & G. W. Whitmer	Pierson	Financier 6135	Shire
3054	Ira Kelsey	Hornick	Rodrigo 40916	Percheron
3154	S. L. Spencer	Sloan	Our Baron 33108	Trotter

WOODBURY COUNTY—CONTINUED.

Cert. No.	Name of Owner	Postoffice	Name of Stallion	Breed
248	Ramsey & Kingland	Joice	Trader 18996	Percheron
474	J. H. Huber	Meltonville	Selim 32699	Percheron
420	J. I. Hove	Northwood	Prince 31725	Percheron
2253	Deer Creek Draft Horse Co	Deer Creek	Ardent 27452 (44168)	Percheron
2808	Ben Moore	Manly	Vallent 30183	Percheron
2875	M. J. Tracy	Manly	Dewey 23968	Percheron
2897	Danville Percheron Horse Co	Kensett	Chaumont (52914)	Percheron

WRIGHT COUNTY.

815	Henry Mauss	Belmond	Corbon 34819	Percheron
902	Oliver Fryslie	Dows	Orient 27808 (47028)	Percheron
1292	G. W. Finn	Dows	Volunteer Clippings 41142	Trotter
1394	G. H. Jameson	Dows	De Arve 40182	Percheron
1395	G. H. Jameson	Dows	Kruger De Corthys 2228 (24678)	Belgian
1500	W. H. Mantle	Goldfield	Keota Decide 20211	Percheron
1755	E. G. Gould	Eagle Grove	Eden G. 42250	Trotter
2528	Polhemus Bros	Belmond	Bonhomme 14113 (474) B	French Draft
2549	F. Luick & Son	Belmond	Virly 13530 (48482) P 42334	French Draft Percheron
2550	F. Luick & Son	Belmond	DuPiton 17063 (33658)	Percheron
2705	Dows Shire Horse Co	Dows	Exton Vulcan 6997 (Vol. 25)	Shire
1926	J. C. Gingerich	Eagle Grove	Obstine 50544 (62536)	Percheron
2818	J. H. Callahan	Goldfield	Keota Garfield 4970	Shire
2856	E. Vest	Goldfield	Maraudeur 44468 (55601)	Percheron



Armour's six-horse draft team—Iowa State Fair, 1906.

PART XII.

FINANCIAL STATEMENT

AND

Report of Agricultural Conditions

BY

County and District Agricultural Societies in Iowa, 1906.

SECTIONS OF LAW GOVERNING COUNTY AND DISTRICT AGRICULTURAL SOCIETIES.

Sec. 1658. (Code Supplement.) **County societies—premiums.** County and district agricultural societies may annually offer and award premiums for the improvement of stock, tillage, crops, implements, mechanical fabrics, articles of domestic industry, and such other articles and improvements as they may think proper, and so regulate the amount thereof and the different grades as to induce general competition.

(For annotations see Code, page 605.)

Sec. 1659. (Code Supplement.) **List of awards.** Each county and district society shall annually publish a list of the awards, and an abstract of the treasurer's account, in one or more newspapers of the county, with a report of its proceedings during the year, and a synopsis of the awards. It shall also make a report of the condition of agriculture in the county to the board of directors of the state agricultural society, which shall be forwarded on or before the first day of November in each year to the secretary of said society. The auditor of state, before issuing a warrant in favor of such societies for any amount, shall demand the certificate of the secretary of the state society that such report has been made. Any society failing to report on or before the first day of November shall not receive state aid for that year.

(For annotations see Code, page 605.)

SEC. 1660. (Code.) **Appropriations from county.** When a county agricultural society shall have procured in fee simple, free incumbrance, land for fair grounds not less than ten acres in extent, or hold and occupy such amount of land by virtue of a lease, and own and have thereon buildings and improvements worth at least two thousand dollars, the board of supervisors of the county may appropriate and pay to it a sum not exceeding one hundred dollars for every thousand inhabitants in the county, to be expended by it in fitting up or purchasing such fair grounds, but for no other purpose; but the aggregate amount so appropriated shall not exceed one thousand dollars to any one society.

SEC. 1661. Code Supplement.) **State aid to district or county—failure to report.**

Any county or district agricultural society, upon filing with the auditor of state affidavits of its president, secretary and treasurer, showing what sum has actually been paid out during the current year for premiums, not including races, or money paid to secure games or other amusements, and that no gambling devices or other violations of law were permitted, together with a certificate from the secretary of the state society showing that it has reported according to law, shall be entitled to receive from the state treasury a sum equal to forty per cent of the amount so paid in premiums, but in no case shall the amount paid to any society exceed the sum of two hundred dollars. When any society fails to report, according to law, on or before the first day of November, that society shall not receive a warrant from the state auditor for that year, but the secretary of the state board of agriculture shall notify the county auditor of the county in which such society is located of said failure, and the board of supervisors may appoint a delegate to the annual meeting or state agricultural convention, said delegate to be a resident of said county.

(For annotations to original section see Code, page 605.)

SEC. 1662. (Code.) **Reports to supervisors.** Each society receiving such appropriation shall, through its secretary, make to the board of supervisors a detailed statement, accompanied with vouchers, showing the legal disbursement of all moneys so received.

SEC. 1663. (Code.) **Permits.** The president of a district or county agricultural society may grant a written permit to such person as he thinks proper to sell fruit, provisions, and other articles not prohibited by law, under such regulations as the board of directors may prescribe.

SEC. 1664. Code.) **Police power.** The president of any such society may appoint such number of peace officers as may be necessary, and may arrest or cause to be arrested any person violating any of the provisions of this chapter, and cause him to be taken before some justice of the peace, to be dealt with as provided by law, and he may seize or cause to be seized all intoxicating liquors, wine or beer of any kind, with the vessels containing same, and all tools or other implements used in any gambling, and remove or cause to be removed all shows, swings, booths, tents, carriages, vessels, boats, or any other thing that may obstruct or cause to be obstructed, by collecting persons around or otherwise, and thoroughfare leading to the enclosure in which such agricultural fair is being held. Any person owning, occupying or using any of such things causing such obstruction, who shall refuse or fail to remove the same when ordered to do so by the president, shall be liable to a fine of not less than five nor more than one hundred dollars for every such offense. During the time the fair is being held no ordinance or resolution of any city or town shall in any way impair the authority of the society, but it shall have sole and exclusive control and management thereof.

SEC. 1665. **Fraudulent entries of horses..** No person, partnership, company or corporation shall knowingly enter or cause to be entered any horse of any age or sex under an assumed name, or out of its proper class, to compete for any purse, prize, premium, stake or sweepstake offered or given by any agricultural or other society, association, person or persons in the state, or drive any such horse under an assumed name or out of its proper class, where such prize, purse, premium or sweepstake is to be decided by a contest of speed.

SEC. 1666. **Penalty.** Any person convicted of a violation of the preceding section shall be imprisoned in the penitentiary for a period of not more than three years, or in the county jail for not more than one year, and be fined in a sum not exceeding one thousand dollars.

SEC. 1667. **Entry under changed name.** The name of any horse, for the purpose of entry for competition in any contest of speed, shall not be changed after having once contested for a prize, purse, premium, stake or sweepstake, except as provided by the code of printed rules of the society or association under which the contest is advertised to be conducted, unless the former name is given.

SEC. 1668. **Class determined.** The class to which a horse belongs for the purpose of an entry in any contest of speed, as provided by the printed rules of the society or association under which such contest is to be made, shall be determined by the public record of said horse in any such former contest.

PURCHASE OF LAND FOR COUNTY FAIR SOCIETIES.

Chapter 97, Acts of Thirty-second General Assembly.

SECTION 1. **Supervisors empowered to purchase.** That section four hundred twenty-two (422) of the Code be and the same is hereby amended by adding thereto as sub-division twenty-four (24) the following:

"24. To purchase real estate for county fairs. The title of such real estate to be in the name of the county."

SEC. 2. **Question submitted—notice—title in county—control.** Section sixteen hundred sixty (1660) of the Code is hereby amended by adding thereto the following:

"The board of supervisors are further authorized to purchase real estate for county fair purposes, in sums exceeding one thousand dollars ($1,000.00), providing however, that the board of supervisors shall first have submitted to the legal voters of the county a proposition therefor, and voted for by a majority of all persons voting for and against such proposition at a general or special election; notice to be given as provided in section four hundred twenty-three (423) of the supplement to the code. And the board of supervisors shall not exceed in the purchase of such real estate, the amount so voted for. The title of such real estate when purchased to be taken in the name of the county, and the board of supervisors shall place such real estate under the control and management of an incorporated county fair society, as long as an annual county fair is maintained by such corporation on said real estate. And said corporation is authorized to erect and maintain buildings and make such other improvements on said real estate as is necessary, but the county shall not be liable for such improvements, or the expenditures therefor. Th right of such county fair society to the control and management of said real estate may be terminated by the board of supervisors whenever well conducted agricultural fairs are not annually held thereon."

REPORT OF AGRICULTURAL CONDITIONS BY COUNTIES.

ADAIR.

J. E. BROOKS, GREENFIELD, OCTOBER 18, 1906.

General Condition of Crops and Season—The season was favorable for nearly all crops to fully mature, and for corn and oats more favorable than for several years. This particular locality has been favored with seasonable rains, although the total rainfall was below normal, and ponds and water-courses are low at this time.

Corn—Will be above the average, both in quality and yield. A great deal more than usual was cut for fodder.

Oats—Excellent, both in quality and yield. Extra heavy grade, often weighing forty pounds to the bushel.

Wheat—Very little raised.

Rye—Practically none raised.

Barley—None raised.

Flax—None raised.

Buckwheat—Small patches only, and few of them.

Millet—None raised.

Sorghum—Very little raised. Only one cane-mill, to my knowledge, within a radius of ten miles of Greenfield.

Timothy—Not a heavy crop, owing to there not being sufficient moisture early in the season, but the quality was good and a large percentage was cut for seed.

Clover—Very little raised except in mixture with other grasses, and but small amount cut for seed.

Prairie Hay—Practically none, as there is no unbroken prairie in this county.

Other Grains and Grasses—Bluegrass and clover is the main pasturage, and drive out all other grasses where soil is not cultivated for a few years.

Potatoes—A very light yield, there not being enough to supply the home demand.

Vegetables—An abundant crop.

Apples—Many are going to waste. Excessive cost of transportation makes the marketing of them unprofitable.

Other Fruits—Peaches were abundant for this locality and many varieties were shown at the fair. Cherries were so plentiful that they were a drag on the market. Other small fruits were abundant.

Cattle—Several fine herds in this county. Short-Horn and Polled Angus are the breeds most numerously represented, although there are some herds of Herefords and Red Polled. There are many fine individuals.

Horses—Large numbers of fine horses are produced of both draft and roadster breeds. Very few weeks in the year when one or more cars are not shipped from this county. There are several large breeders of Clydesdales, Shires and Percherons, and their exhibits at the fair were fine. There are many standard bred trotters and pacers, and most of these races at our fair were filled by horses owned in this county.

Swine—This exhibit at the fair was immense. Many of the herds on exhibit were shown at adjoining county fairs, and also at the State Fair. A great many are raised in this county, and are unsurpassed in breeding.

Sheep—While it would seem that this line of animal husbandry could be carried on with profit in this county, there are few sheep kept or raised, but they usually are of good breeding.

Poultry—One of the main sources of profit to our farmers. Nearly every variety of fowl is raised, and a great many of fine breeding. There has been marketed in Greenfield over two thousand dollars' worth of chickens in a single day.

Bees—Very little attention given to this industry.

Drainage—An increased amount of tiling is being done each year. There is a large brick and tile factory at Greenfield, and its entire output is not sufficient to supply the home demand.

Other Industries—There are several creameries in the county, and some of them produce butter that brings the highest prices on the New York market.

There is a good opening here for a vegetable canning establishment.

Lands—County contains some of the best agricultural land in Iowa, which means as good as any in the world. Prices range from fifty to one hundred dollars per acre, with very little at the former figure.

Report of Fair—Fair held at Greenfield, September 4-7, and was a success. Weather was favorable, exhibits in all departments good, and receipts exceeded expenditures by about four hundred dollars. How to make the county fair a financial success is a difficult problem, as with most of them the balance is usually on the wrong side of the ledger.

ADAMS.

B. NEWCOMB, CORNING, OCTOBER 25, 1906.

General Condition of Crops and Season—Very good. The early part of the season was extremely dry, and pasturage and hay crops were not up to the average. All kinds of grain matured exceptionally well, and on the whole our crop was above the average.

Corn—A large acreage and an exceptionally good crop.

Oats—Of the best quality and yield that this county has had for several years.

Wheat—Small acreage, but yield and quality good.

Rye—Very little raised.

Barley—Although there is not much sown in this county the acreage is being increased each year, and the past season it yielded a fair crop of good quality.

Flax—Very little raised.

Buckwheat—None raised.

Millet—Does well here, but only a small acreage sown the past season. It is raised a great deal in wet seasons.

Sorghum—Small acreage.

Timothy—Usually a very abundant crop, but owing to the dry weather the past season was not up to the average.

Clover—Owing to dry season did not yield the usually large crop.

Prairie Hay—Very little raised.

Apples—Above the average both in quality and yield.

Other Fruits—Plentiful.

Cattle—In good demand at present and bringing fair prices. The supply for the county is probably not up to the usual number, but as an industry it is recognized as one of the leading ones in this community.

Horses—This industry is an active and prosperous one here. Good prices are realized for all horses and mules, and there is a noticeable improvement in the grade raised.

Swine—Probably the leading industry of this county. Crop of pigs this year not up to the average. Prices have remained good throughout the year, and breeders and farmers have realized good profits.

Sheep—Very few raised or kept.

Drainage—Natural conditions are very good. Tile drainage is being taken up to a great extent and with wonderful results.

Lands—General quality of the land is good, and is largely devoted to the production of corn and other grains. Bluegrass is an abundant crop.

Report of Fair—Held at Corning, August 27-30. The general attendance was exceptionally good.

ALLAMAKEE.

J. H. KELLY, WAUKON, OCTOBER 9, 1906.

General Condition of Crops and Season—Crops good; season quite wet until September 15th.

Corn—Good.

Oats—Fair.

Wheat—Very little raised.

Rye—Good.

Barley—Good weight; partly colored.

Flax—Good.

Buckwheat—Fair.

Sorghum—Good.

Timothy—Good.

Clover—Good.

Prairie Hay—None raised.

Potatoes—Good.

Vegetables—Good.

Apples—Summer varieties good.

Other Fruits—Small varieties good.

Cattle—Good.

Horses—Good.

Swine—Good.

Sheep—Good.

Poultry—Good.

Drainage—Best in the state.

Lands—Worth from ten to one hundred dollars per acre.

Report of Fair—Held at Waukon, September 18-21. Heaviest rain of year Wednesday night, continuing until 10 o'clock Thursday. Grounds very wet. Attendance fair, considering the unfavorable weather.

AUDUBON.

C. E. BRENIMAN, AUDUBON, OCTOBER 26, 1906.

General Condition of Crops and Season—Although the season was rather dry, most all crops were better than average of former years, except hay, which was about twenty per cent short in yield, although it was of excellent quality.

Corn—Above the average, both in quality and yield.

Oats—An exceptionally good crop, both in quality and yield. Averaged about fifty bushels per acre, clean and heavy, weighing from thirty-eight to forty pounds per bushel.

Wheat—Of excellent quality and yielded above the average for this locality.

Rye—Small acreage, but yield and quality good.

Barley—Of good yield and quality, except color.

Flax—None raised.

Buckwheat—Quality good, but small acreage.

Millet—Small acreage, but yield and quality good.

Sorghum—An exceptionally fine crop of very juicy stalks, and some fine molasses the result.

Timothy—Rather light crop, but that which was cut for seed yielded well.

Clover—Fair crop of hay, but scarcely any seed; did not seem to fill.

Prairie Hay—Small yield, but of exceptionally fine quality.

Potatoes—Small acreage, fine quality and average yield.

Vegetables—Yielded well, especially onions, of which there was an increased acreage over former years.

Apples—Early varieties yielded an abundant crop and were of exceptionally fine quality; a great many, however, are going to waste on account of no market. Late and winter varieties are of excellent quality and average yield.

Other Fruits—Strawberries were not very good, either in quality or yield. Raspberries and other small fruits were fine, both in quality and yield.

Cattle—More were raised during the past year than during any previous year in the history of the county, and the finer grades seem to be in the ascendant; especially is this true of the milch breeds. Possibly not quite so many being fed for market as in some other years, but altogether an improvement is noticeable.

Horses—There is a noticeable diminution in the size of the horses in this county, due to the high prices offered by outside buyers, having resulted in the purchase and shipment out of the county of many of the best and largest horses. However, the young stock now coming on is of the finest draft breeds, of which there seems to be a larger number than usual.

Swine—This county has the reputation of being the largest swine-producing one of the state for its size, and a drive over the county will bear out this statement, as will the shipping records of the railroads. It is impossible to estimate the number now on hand, but it will exceed all previous records.

Sheep—This industry has had an unusual impetus the past year, and there are now a larger number in the county, by one hundred per cent, than at any previous time.

Poultry—Increase in quantity, especially the Spanish varieties, on account of increased egg production. Large shipments of market poultry are sent out each fall, and indications are that a larger number are now on hand than at any time during the past.

Bees—Not so numerous as formerly, but a few farmers have a hive or two, and occasionally there is one with a dozen or more. The past season has not been a favorable one for the honey crop on account of the dry weather, and very few pounds have been marketed.

Drainage—Natural drainage is very good, and the small amount of tile that is used is of the small size.

Other Industries—The butter industry is the largest and most profitable and almost the only one of mentionable proportions. There are eleven active creameries in the county, and several car loads of butter are shipped weekly.

Lands—Are booming in price, ranging from seventy-five to one hundred and twenty-five dollars per acre. There is very little uncultivated land, and the wealth of the county is second to none of its size in the state.

Report of Fair—Held at Audubon, September 4-7. Exhibits in every department were exceptionally good. Attendance larger than any previous year in the history of the society.

BLACK HAWK.

B. L. MANWELL, LA PORTE CITY, OCTOBER 26, 1906.

General Condition of Crops and Season—Above the average.

Corn—The best crop in years; no soft corn, every ear being fit to crib.

Oats—Average yield; quality not quite as good as last year's.

Wheat—Very little raised.

Rye—None raised for market.

Barley—Small acreage, but yielded a crop of good quality.

Flax—None raised.

Buckwheat—None raised.

Millet—Very little raised this year. A crop which is only raised here on corn land which has been drowned out.

Sorghum Not much raised.

Timothy—No seed has been marketed at this place this year.

Clover—Very little saved.

Prairie Hay—None raised. A few sloughs in this county, which yield a poor quality of hay.

Potatoes—Yielded a good crop, and are selling around thirty cents per bushel.

Vegetables—An exceptionally good crop.

Apples—Fine crop, both in quality and yield. Market over-stocked with fall varieties; winter varieties selling at one dollar per bushel.

Other Fruits—Average yield.

Cattle—Condition good. About five hundred feeders have been shipped in to date and more are coming.

Horses—Mature draft horses very scarce; prices high. A great many colts ranging in age from sucklings to three years old.

Swine—Spring crop of pigs below the average in number. Very few old ones on hand. No disease reported.

Sheep—Very few raised.

Poultry—There is a noticeable increased interest in this industry.

Bees—Over fifty per cent died last winter, but a good many new colonies have been added this year.

Drainage—A great deal of tile is being shipped in and laid.

Other Industries—Canning of corn is a leading one, there being six factories in this district; two at Vinton, one at Shellsburg, one at Garrison, one at Waterloo and one at La Porte City. The one at La Porte City canned about one and one-half million cans the past season from twelve hundred acres. Price paid was five dollars per ton.

LANDS—Considerable changing hands, of which about fifty per cent is in trade for northern lands, especially in North Dakota. However, such farms are being taken by good farmers, who are glad to stay in Iowa.

REPORT OF FAIR—The LaPorte City District Fair Association held its 1906 meeting at LaPorte City, September 18, 19 and 20. The association adopted the three-day rule, and it was demonstrated that more people will attend a two days' race programme than a three days'. Exhibits were better than last year, and especially was this true of the horse department, there being fifteen more stalls used than last year. The grade draft colt show was pronounced the best ever seen at a small fair. The cattle exhibit was above the average, there being on exhibit two herds of Polled Angus, three of Herefords and one of Short-Horns, with a few scattering exhibits. There was the usual exhibit of swine; poultry above the average; fruit, the finest in years, and a good exhibit in other farm products, this being especially true of corn, which surpassed any that we have ever had. There is a growing increase of interest being taken in our fair, outside of the immediate membership of the association.

BOONE.

F. M. LORENZEN, OGDEN, OCTOBER 19, 1906.

GENERAL CONDITION OF CROPS AND SEASON—The season was very favorable and crops in general are the best for years.

CORN—Large acreage and yield and quality good, it being pronounced the best crop for several years.

OATS—Yield and quality good; acreage probably not so large as last year.

WHEAT—Somewhat above the average in acreage, yield and quality

RYE—None raised.

BARLEY—Very little sown, but yielded a fair crop.

FLAX—None sown.

BUCKWHEAT—Small acreage, but yield and quality good.

MILLET—Small acreage, owing to dry season. Yield and quality fair.

SORGHUM—Good.

TIMOTHY—Not up to standard either in yield or quality.

CLOVER—Fair.

PRAIRIE HAY—Very little prairie hay land in this county, but the past season yielded well and was put up in excellent condition.

OTHER GRAINS AND GRASSES—Good.

POTATOES—Short yield; quality good.

VEGETABLES—Good.

APPLES—Light crop.

OTHER FRUITS—Cherries, strawberries, plums and raspberries yielded a fair crop.

CATTLE—Conditions are about normal as to breeding and feeding. Prices good. No disease reported.

HORSES—Renewed activity in breeding is noted. Prices high, good ones being bought and shipped to other markets as they mature.

SWINE—In a healthy condition. Pig crop large.

SHEEP—Not many raised.

POULTRY—Continues to be a profitable industry.

BEES—Good.

DRAINAGE—Much has been done in the past year to improve farms by drainage of low lands, the cost of which has been repaid in large returns from more tillable acres.

OTHER INDUSTRIES—The manufacturing of brick and tile and coal mining are industries of this county, and all seem to be doing a flourishing business.

LANDS—Prices remain about the same as last year, ranging from seventy-five to one hundred and ten dollars per acre.

REPORT OF FAIR—Held at Ogden, September 26-28. Favorable weather prevailed throughout, and all departments were well filled with excellent exhibits.

There was an increased effort on the part of our people to make the 1906 fair a record-breaker, and the patrons were not disappointed. The attendance was much larger than any former year, and also from point of exhibits the meeting was a decided success.

As special attractions we had excellent band music, baseball games, balloon ascensions, performing horses, trapeze and aerial acts.

The livestock exhibits were the largest and best in the history of the society, the horse and swine departments being filled to overflowing.

Total receipts were very satisfactory.

BUCHANAN.

CHAS. L. KING, INDEPENDENCE, OCTOBER 15, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Favorable season; crops above average.

CORN—Good; never better.

OATS—Fine.

WHEAT—Very little, if any, raised.

RYE—Good.

BARLEY—Good.

FLAX—None raised.

BUCKWHEAT—Very little planted, but with good results.

MILLET—Fine.

SORGHUM—Good.

TIMOTHY—Light crop.

CLOVER—Fair to poor.

PRAIRIE HAY—Fair.

POTATOES—Fair.

VEGETABLES—Good.

APPLES—Overabundance.

OTHER FRUITS—Good.

CATTLE—Fair.

HORSES—Good.

SWINE—Good.

SHEEP—Good.

POULTRY—Good.

LANDS—Gradually advancing in price.

REPORT OF FAIR—Held at Independence, September 3-7. Favorable weather and attendance good.

BUENA VISTA.

C. E. CAMERON, ALTA, SEPTEMBER 25, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Never in the history of the county have the crops as a whole been as good, the season being ideal for maturing all kinds of grain.

CORN—Out of the way of frost, and will yield from forty to sixty bushels per acre.

OATS—Of good quality and heavy. Yielded about fifty bushels per acre.

WHEAT—Acreage small but quality good, and yielded from fifteen to twenty-five bushels per acre of spring wheat. A few farmers tried winter wheat last fall which yielded about twenty-five bushels per acre of good quality.

RYE—Very little raised.

BARLEY—Extra good; yielded from thirty to fifty bushels per acre.

FLAX—None raised.

BUCKWHEAT—Very little raised.

MILLET—Very little sown; yielded about three tons per acre.

SORGHUM—Very little sown.

TIMOTHY—Quality extra good, and yielded from one and one-half to two tons per acre.

CLOVER—Last year's seeding good, old meadows frozen out. Yielded about two tons per acre.

PRAIRIE HAY—None raised.

POTATOES—Indications for a good crop. Have not as yet commenced to dig late varieties.

VEGETABLES—All kinds were extra good.

APPLES—A good crop of Wealthy variety; others scarce.

OTHER FRUITS—Cherries and cultivated plums yielded such an extra large crop that they were a drag on the market and many bushels of them rotted on the ground.

CATTLE—In fine condition. Plenty of grass stock cattle at 4 cents per pound; fat cattle, 5½ cents per pound.

HORSES—Scarce; eastern buyers have purchased all the good horses that are for sale.

SWINE—Average crop. No disease reported.

SHEEP—Very few raised.

POULTRY—A great many raised in this county, and production this year was large. Quite a number of car loads are shipped out each year.

LANDS—Range in price from ninety to one hundred and sixty dollars per acre.

REPORT OF FAIR—Held at Alta, August 21-24. Up to the standard of former years. Large and excellent exhibits in every department. Rain the last day cut the attendance considerable.

BUTLER.

J. V. GREGORY, ALLISON, SEPTEMBER 25, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Crop was above the average of the past four years. The season has been favorable and farmers have been enabled to attend to their crops without serious difficulty. No frost to date; corn well out of way.

CORN—Best in years. Quality excellent, and yield will be large. Sample ears have been exhibited taken from fields that will yield seventy bushels per acre.

OATS—Very good, although a little light in weight.

WHEAT—Small acreage, but quality good.

RYE—Of average yield and quality.

BARLEY—Very little raised.

FLAX—Very little raised.

BUCKWHEAT—Small acreage, but yielded a good crop.

MILLET—Raised on wet lands; always of good quality.

SORGHUM—None raised.

TIMOTHY—Very good.

CLOVER—Not a large amount raised but was of good quality.

PRAIRIE HAY—Heavy yield and was put up in good condition.

POTATOES—An unusually heavy yield of large, solid potatoes of the finest quality.

VEGETABLES—Abundant and of good quality.

APPLES AND OTHER FRUITS—Excellent, both in quality and yield.

CATTLE—A large number of breeders in this county, and stock is of the best. A profitable industry, and feeding operations are carried on in a scientific manner.

HORSES—Of a good grade.

SWINE—Probably more hogs fed in this county than any other animal. They rapidly grow into money, and the farmer has learned this fact.

SHEEP—Very few in this county.

POULTRY—Quite a number of people in this county have made a specialty of poultry, realizing that it is one of the industries that pays. We have several poultrymen who have only the highest grade birds and ship eggs all over the country.

BEES—Not very many, although the industry is followed quite extensively by a few, who make it pay.

DRAINAGE—Farmers and landowners are seeing more the need of good drainage, and in the next two or three years there will be more done than ever before. The general conditions, however, in relation to drainage, are good.

OTHER INDUSTRIES—Very few, other than agricultural.

LANDS—Are of fine quality for agricultural purposes. Good farm lands, well located, command from seventy-five to one hundred dollars per acre, and are advancing in price.

REPORT OF FAIR—Held at Allison, September 4-6. The attendance was good, there being over five thousand people on the grounds the second day, which was an unusually large crowd for our fair. More money than usual was spent for attractions, and every one seemed well pleased, and the outlook for future fairs is good. The exhibits were exceptionally fine in all departments, showing the high quality of livestock, farm products, etc., produced in Butler county.

CASS.

C. S. BROWN, ATLANTIC, OCTOBER 18, 1906.

GENERAL CONDITION OF CROPS AND SEASON—The season has been very favorable for all crops, and there has been no frost to do any damage up to this date.

CORN—Average acreage, fair yield and excellent quality.

OATS—Fair yield and average quality.

WHEAT—Good average quality and fair yield.

RYE—Not much raised.

BARLEY—Small acreage, yield and quality fair.

FLAX—None raised.

BUCKWHEAT—Not enough grown to make estimate.

MILLET—Not enough grown to make estimate.

SORGHUM—Not enough grown to make estimate.

TIMOTHY—Good.

CLOVER—Good.

PRAIRIE HAY—None grown.

POTATOES—Average acreage; yield good; considerable scab.

VEGETABLES—Large crop and of good quality.

APPLES—An abundant crop; largest in several years.

OTHER FRUITS—Cherries and grapes yielded an exceptionally large crop, while other fruits were of an average yield.

CATTLE—In good condition; no disease reported.

HORSES—In good condition; increase in the number raised; prices good.

SWINE—In good condition; no disease reported.

SHEEP—Industry is on the increase.

POULTRY—Large number raised and are very profitable.

BEES—Very few kept.

DRAINAGE—Natural drainage is very good; tile used to a small extent in low places.

OTHER INDUSTRIES—Manufacturing is on the increase.

LANDS—Prices steady, ranging from fifty to one hundred dollars per acre.

REPORT OF FAIR—Held at Atlantic, September 17-21. Although the weather conditions were very unfavorable, it raining almost the entire week, the meeting was considered a success. Exhibits in every department were large and of excellent quality.

CASS.

D. P. HOGAN, MASSENA, OCTOBER 24, 1906.

General Condition of Crops and Season—Good.

Corn—Good, although season was somewhat dry between July and September 1.

Oats—Best crop in years, both in quality and yield.

Wheat—Excellent yield and quality good of both fall and spring varieties.

Rye—None grown.

Barley—Good, both in quality and yield.

Flax—None raised.

Buckwheat—None raised.

Millet—Good.

Sorghum—Good.

Timothy—Light crop.

Clover—Light crop, season too dry.

Prairie Hay—Slough hay good.

Potatoes—Fair average crop.

Vegetables—Good.

Apples—Large yield and of excellent quality.

Other Fruits—Good.

Cattle—Supply about normal. Prices good, except for thin cattle, which are low in price at this time.

Horses—Prices highest ever known. Colt production large.

Swine—Great many raised, and are in a healthy condition.

Sheep—Industry is increasing.

Poultry—Good.

Bees—On an average with former years.

Drainage—Considerable being done.

Other Industries—Milling business in prosperous condition.

Lands—Increasing in value.

Report of Fair—Held at Massena, September 10-13. Attendance good. Exhibits exceptionally good. After paying off all debts and adding considerable improvements we have a balance of $140 from our receipts of this year, which we think is a very good record for the second year of our association.

CALHOUN.

TOM GRIFFIN, MANSON, OCTOBER 17, 1906.

General Condition of Crops and Season—Season favorable; crops good.

Corn—Good; will yield about fifty-five bushels per acre.

Oats—Good, both in quality and yield.

Wheat, Rye, Barley, Flax, Buckwheat, Millet, Sorghum—Very little grown here.

Timothy—Light crop.

CLOVER—Light crop.

PRAIRIE HAY—Light yield; season too dry.

POTATOES—Fairly good.

VEGETABLES—Good.

APPLES—Light crop.

OTHER FRUITS—Good.

CATTLE—Good.

HORSES—In good condition.

SWINE—Pig crop not as large as usual. Some cholera reported.

SHEEP—Not many in county, but are of good breeding.

POULTRY—A large number raised this year.

BEES—Small amount of honey; season too dry.

DRAINAGE—Most of the farms are well drained.

LANDS—Range in price from seventy-five to one hundred dollars per acre. Not many farms for sale.

REPORT OF FAIR—Held at Manson, September 4-7.

CEDAR.

H. PIATT, TIPTON, OCTOBER 2, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Season dry; crops good.

CORN—Exceptionally large and well-matured crop. Best for years. The principal varieties grown are yellow and white dent.

OATS—Good.

WHEAT—Very little raised.

RYE—Small acreage, but yielded a good crop.

BARLEY—Fine. Good price obtained.

FLAX—None raised.

BUCKWHEAT—Very little raised.

MILLET—None raised.

SORGHUM—Small acreage, but yielded well.

TIMOTHY—Fair.

CLOVER—Fair.

PRAIRIE HAY—None raised.

POTATOES—Fair.

CATTLE—Breeds represented are Short-Horn, Hereford and Polled Angus, all being well graded.

HORSES—Marked improvement in their breeding. Percherons, Shires, Clydesdales and German Coach well represented. Manifest interest in the breeding of roadsters. Ready sale and prices good.

SWINE—Chester White, Poland China and Duroc Jersey are the principal breeds raised. Little, if any, disease.

SHEEP—Breeds represented are Oxford Down, Cotswold and Shropshire. A large number of western sheep are shipped in to feed.

POULTRY—The egg and poultry market of this county is rapidly becoming an important factor to the farmer, and is a source of much revenue.

FRUIT—Plentiful. Peach crop unusually large; one dollar per bushel top price paid.

Lands—Ready sale at from seventy-five to one hundred and twenty-five dollars per acre.

Report of Fair—Held at Tipton, August 28-31. Good weather prevailed throughout, the only objection being the dust. Declared a successful fair in every respect. A good showing of horses, cattle, sheep, and swine. Exhibit of poultry the best in years. Display of fruit and vegetables fine. In the art hall, as usual, the ladies made a large and beautiful display. Special displays by merchants were good.

The attendance was good. The races were the center of attraction, there being a good field of horses and all races well contested.

CHICKASAW.

W. F. GETSCH (TREASURER), NASHUA, OCTOBER 18, 1906.

General Condition of Crops and Season—Season could not have been more favorable.

Corn—Fully matured before frost; will average about thirty-five bushels per acre.

Oats—Yielded about thirty bushels per acre, and was of good quality.

Wheat—None raised.

Rye—Yielded about twenty bushels per acre.

Barley—Of good quality and yielded about thirty bushels per acre.

Flax—None raised.

Buckwheat—Of good quality and yielded about fifteen bushels per acre.

Millet—Very good.

Sorghum—Good.

Timothy—Light yield, owing to month of May being very dry; averaged about one ton per acre.

Clover—Good, yielded about one ton and a half per acre.

Prairie Hay—Heavy yield.

Other Grains and Grasses—Good.

Potatoes—Yielded a very good crop.

Vegetables—Good.

Apples—Good yield.

Other Fruits—Very good.

Cattle—Average number, but not as many heavy steers as usual.

Horses—Marketable ones are scarce.

Swine—Quality is improving.

Sheep—Not very many.

Poultry—Plentiful.

Bees—Quite a number in this section.

Drainage—Natural condition is very good; no tiling being done.

Lands—Range in price from forty-five to eighty dollars per acre.

Report of Fair—Held at Nashua, September 4-7. Exhibits in every department were larger than ever before in the history of our association. Attractions were good, and the attendance large, and the fair as a whole was pronounced a success.

CLAYTON.

HENRY LUEHSEN, GARNAVILLO, OCTOBER 5, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Very good. All crops were excellent.

CORN—The best crop for many years.

OATS—Excellent crop, both in quality and yield.

WHEAT—Small acreage, but yielded a very good crop.

RYE—Very little raised.

BARLEY—Good crop, best raised for several years.

FLAX—None raised.

BUCKWHEAT—None raised.

MILLET—Very little raised.

SORGHUM—Very good, both in quality and yield.

TIMOTHY—Extra good.

CLOVER—Up to the average.

PRAIRIE HAY—Very good; the best for many years.

OTHER GRAINS AND GRASSES—Good.

POTATOES—Excellent; never were better. An abundant crop of good quality.

VEGETABLES—Good. Best raised for many years.

APPLES—Good, although in some parts of the county they were damaged to some extent by frosts early in the season.

OTHER FRUITS—Plentiful and of good quality, although damaged to some extent by frosts early in the season.

CATTLE—Are in good condition, and of high grade. Farmers are adding more pure bred stock to their herds each year. The leading breeds are Short-Horn, Hereford, Polled Angus, Galloway and Jersey.

HORSES—Are on an average with former years. The different breeds raised are Percheron, Belgian, French Draft, Clydesdale and English Shires.

SWINE—As in former years this is the principal industry of the county and is growing from year to year. The choice herds are Poland China, Chester White, Duroc Jersey and Yorkshires.

SHEEP—Some very choice flocks. Farmers are raising them more extensively, increasing their flocks each year.

POULTRY—Another flourishing and profitable industry in this part of the county. A large number of thoroughbred fowls are being raised.

BEES—Honey crop excellent.

DRAINAGE—Good natural drainage.

OTHER INDUSTRIES—Dairying is receiving considerable attention.

LANDS—Range in price from eighty to one hundred dollars per acre, but none for sale. Some rough lands are priced at from twenty-five to fifty dollars per acre.

REPORT OF FAIR—Forty-sixth annual exhibition held at National, September 4-7. It was a grand success, the weather being favorable, which added greatly to the success of the fair. The attendance was larger than ever before, there being more than ten thousand people in attendance on Thursday, September 6.

The exhibits of stock, poultry, grains, fruits and vegetables were unusually large and of excellent quality. The industrial and fancy work departments contained many more exhibits than ever before, and the floral hall was crowded from top to bottom.

Every one was well pleased, as there was plenty of amusements and the very best band of music that could be secured. Taken as a whole it was the most successful fair the society has ever held, giving the management encouragement to go ahead and push things for the fair of 1907, which will be held September 3, 4, 5 and 6.

CLAYTON.

J. A. KRAMER, ELKADER, OCTOBER 26, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Season favorable; crops good, excepting hay which was a little light in yield.

CORN—First class; well matured, very little, if any, damaged by frost.

OATS—Good. Threshing was delayed to some extent on account of heavy rains. Quality fair to good.

WHEAT—Small acreage but yielded a good grade.

RYE—Good average crop.

BARLEY—An exceptionally good crop, both in quality and yield.

FLAX, BUCKWHEAT, MILLET—None raised.

SORGHUM—Some raised, but not of a good quality, running too much to water.

TIMOTHY—Fair; early part of season too dry.

CLOVER—Fair to good.

PRAIRIE HAY—None raised.

POTATOES—Good crop, although affected by rot to some extent, especially late varieties.

VEGETABLES—Good, both in quality and yield.

APPLES—Good yield, but of only fair quality.

OTHER FRUITS—Good. An abundant crop of grapes.

CATTLE—Average number raised, and there is a noticeable improvement in their breeding.

HORSES—Scarce and selling at very high prices. Usually of good breeding.

SWINE—Average number raised; of good quality and improving each year.

SHEEP—Very few in this county, but are of a good grade.

POULTRY—A growing industry; a great many raised the past season.

BEES—Very few.

DRAINAGE—Natural conditions very good.

LANDS—Very little changing hands. Prices range from thirty to one hundred dollars per acre.

REPORT OF FAIR—Held at Elkader, August 21-24. Weather very hot and dry, being the warmest of the year. Fair crowd Wednesday; large crowd Thursday. Friday it began raining in the forenoon and kept the crowd away. The sentiment of all present was that it was too hot and early for a fair, so the fair of 1907 will be held later in the season.

CLINTON.

J. B. AHRENS, LYONS, SEPTEMBER 29, 1906.

General Condition of Crops and Season—Good and very favorable. No frosts in this vicinity to date.

Corn—Of good quality and will yield, on an average, forty bushels per acre.

Oats—Not as good as last year. Would have been of good quality had it not been for the wet weather during harvest time. Average yield thirty-five bushels per acre.

Wheat—Small acreage, but yielded an average of twenty-seven bushels per acre and was of good quality.

Rye—None raised.

Barley—Averaged about thirty bushels per acre, of fair color and quality.

Flax, Buckwheat, Millet, Sorghum—None raised.

Timothy—Short crop; quality good.

Clover—Good stand, also of good quality.

Prairie Hay—None raised.

Potatoes—Yield not up to average; quality fair.

Vegetables—Plentiful, and of good quality.

Apples—About half a crop.

Other Fruits—Peaches and pears plentiful, and of good quality.

Cattle—The same as usual. Not much attention paid to breeding.

Horses—Plentiful. A great deal of attention paid to quality of breeding. Drafters selling at from one hundred to two hundred and fifty dollars.

Swine—An unusually large number raised this year.

Sheep—None to speak of, especially in this vicinity.

Poultry—Plentiful, the weather having been favorable for the raising of them.

Drainage—Very little artificial drainage being done.

Lands—Active demand at prices ranging from eighty-five to one hundred and twenty dollars per acre.

Report of Fair—Held at Clinton, September 18-21. Weather extremely favorable through the week. Live stock exhibit was not as large as last year, which was no doubt due to the extreme hot weather. Other exhibits were as large as usual, and the attendance was very good considering that ours was the last fair in this vicinity.

CLINTON.

P. BUTTERFUSS, DE WITT, OCTOBER 15, 1906.

General Condition of Crops and Season—Crops good; season warm and wet at the right time.

Corn—Good. Perhaps never better.

Oats—Good, both in yield and quality.

Wheat—None raised.

Rye—Small acreage; quality a little light in weight.

Barley—Small acreage, but yielded a good crop.

Flax, Buckwheat—None raised.

Sorghum—Small acreage, but good crop.

Timothy, Clover—Good quality, but light yield.

Prairie Hay—Very small acreage of hay land of this kind, but yielded well.

Potatoes—Light yield, but of good quality.

Vegetables—Good.

Apples—Fair yield, but of poor quality.

Other Fruits—Good, except plums and blackberries.

Cattle—Doing well.

Horses—Good ones are scarce. Prices high.

Swine—In first-class condition. Prices good.

Sheep—Very few in this county.

Poultry—Good, except turkeys.

Bees—Very few kept.

Other Industries—The general businesses are in a healthy condition. There are no factories, but the farming interests are all worked to their fullness.

Lands—Range in price from ninety to one hundred and twenty-two dollars per acre.

Report of Fair—Fair held at De Witt, September 11-14. It rained some on Wednesday afternoon but on the other days fair weather prevailed. Attendance was good.

DAVIS.

J. C. BROUGHARD, BLOOMFIELD, OCTOBER 24, 1906.

General Condition of Crops and Season—Season dry; no general rains through growing season. Crops generally very good.

Corn—Good, both in quality and yield.

Oats—Quality good, but yield below average.

Rye—Small acreage, but yield and quality good.

Millet—Small acreage, but yielded a fair crop.

Sorghum—Good yield, but small acreage.

Timothy—Yield of hay light; seed fair; of good quality.

Clover—Fair.

Potatoes—Good quality, but light yield.

Vegetables—On account of very dry season were only fair.

Apples—Fair crop, both in quality and yield.

Other Fruits—Strawberries, good; blackberries and raspberries, dried up; plums and grapes, good; peaches, large yield and of good quality.

Cattle—Are only in fair condition, owing to shortage of pasturage. Feeding steers bring a fair price, while stock cattle are low.

Horses—Have done well. Demand and prices good. There is an increase in the number of colts being raised.

Swine—About the usual number raised. No disease reported.

Sheep—Have done well. No disease reported.

Poultry—An increased interest taken in this industry.

BEES—Wintered well but made little honey. Many will have to be fed this winter. No swarms.

DRAINAGE—Very little tile drainage done.

REPORT OF FAIR—Held at Bloomfield, September 12-15, after a postponement of one day on account of hard rain on the 11th. While the attendance was hardly as large as anticipated, it was very good, and most of the classes were well filled with excellent exhibits.

DELAWARE.

J. J. PENTONY, MANCHESTER, SEPTEMBER 19, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Best in years.

CORN—Extra good.

OATS—Fair quality; average yield.

RYE—Good.

BARLEY—Good.

FLAX—Very little raised.

BUCKWHEAT—Good.

MILLET—Fine.

SORGHUM—Small acreage but yielded a good crop.

TIMOTHY—Fair.

CLOVER—Good.

OTHER GRAINS AND GRASSES—Good.

POTATOES—More than an average crop.

VEGETABLES—Good.

APPLES—Good.

OTHER FRUITS—Good.

CATTLE—Gradually running into thoroughbred strains. All in good condition.

HORSES—Scarce; high in price.

SWINE—In fine condition, and lots of them.

SHEEP—Not a great number in this county, but are of good breeding.

POULTRY—Plentiful.

BEES—In good condition.

DRAINAGE—Natural conditions good.

OTHER INDUSTRIES—The creamery industry is in a prosperous condition. Manchester has one of the best plants in the state.

LANDS—Steadily increasing in price.

REPORT OF FAIR—Held at Manchester, September 4-7. Pronounced by all who attended as being the best fair ever held in the county, and outside visitors stating that it was the best county fair held in northeastern Iowa.

FAYETTE.

H. P. HANCOCK, WEST UNION, OCTOBER 6, 1906.

GENERAL CONDITION OF CROPS AND SEASON—The season has been exceptionally favorable for all kinds of crops, there being no severe storms, and seasonable rains distributed through the growing season, and plenty of rain to make exceptionally fine pasturage. On account of the favorable conditions farm work has been done very much better than usual, and crops have been gathered in much better condition than for several years past. There has been no killing frost for the higher land up to this time, and flowers are in bloom in all parts where they have been properly cared for. It has been a year conducive to a real thanksgiving, both for the health of the people and an abundant reward for intelligent industry.

CORN—Not since the year 1881, if ever, has there been such a remarkable corn crop in this part of Iowa. At least ninety-five per cent of the crop is merchantable, and the yield will be the largest ever produced in the county.

OATS—While of exceptionally fine quality with excellent straw, the yield was only an average one. It was free from rust and was not damaged by rain storms.

WHEAT—Is grown on very limited acreage, but where sown this year, yield was large and quality fine.

RYE—Like wheat, is not very largely grown in this county, but the crop this year was fine and the yield very satisfactory.

BARLEY—An unusually large amount was raised this year, mostly for feed, but on account of the heavy corn crop, it has nearly all been marketed. The yield was very heavy.

FLAX—Not grown in this county excepting where sloughs are broken up. It is not a very large factor in crop consideration.

BUCKWHEAT—Only raised by a very few farmers, but the crop this year is fine.

MILLET—Only raised in very limited quantity, mostly for market and chicken feed; very little being used for hay.

SORGHUM—Was raised in larger quantities this year than for several seasons past, and quite a number of cane-mills did a thriving business. The crop matured well, and the yield was very satisfactory.

TIMOTHY—Not so heavy a yield of hay as for several years past, but the yield of seed was large and of fine quality. The hay crop was about two-thirds of the average yield for the past three years.

CLOVER—Was very badly frozen out last winter, but was quite generally re-seeded, and the stand and growth this year was extra good.

PRAIRIE HAY—Scarcely to be considered in Fayette county at this time, as there are only a few pieces left, and these are generally mixed with timothy and other grasses. The yield was very small, but of fine quality.

OTHER GRAINS AND GRASSES—There has been some experimenting with alfalfa, and considerable rape has been sown the past few years. Owing to grass and cornstalks being so rank the past season, rape did not do very well.

POTATOES—Large yield and of fine quality. Early in the season there was complaint of some little rot, but it was very limited.

VEGETABLES—An unusually large crop and were of fine quality, being entirely free from damage by insects and rot.

APPLES—A large yield of all varieties, and were of fine quality. A great many car loads shipped to northern markets.

OTHER FRUITS—All kinds of small fruits, including grapes and plums, yielded a large crop of excellent quality. Quite a large number of peach trees bore excellent fruit.

CATTLE—Have done exceptionally well, owing to the abundance of pasturage from early spring to date. The large hay crop of last year helped to bring the cattle to grass in fine condition in the spring, and all stock is in better condition at this time than for many years.

HORSES—On account of the very high prices which they command at the present time, they are given the best of care, and are in fine condition, generally, free from disease.

SWINE—Are feeling the effects of the big corn crop, and are in fine condition. However, there is some cholera, with good prospects of considerable more. The crop of pigs this year was not up to the average.

SHEEP—While there are very few in this county the number is increasing, and are usually well bred.

POULTRY—Has done well. Favorable season and there was a large crop of young birds. There has been considerable loss by thieves.

BEES—Wintered very badly last year, there being fully one-half of the stands lost before spring. Those that managed to live through the winter were in a very much weakened condition, and while the crop of flowers was large the bees were not in condition to take advantage of it and the crop of honey is light.

DRAINAGE—There has been some tile drainage in this county during the past year but there is more of a disposition on the part of farmers to maintain open ditches with sloping sides, as being cheaper and more satisfactory.

OTHER INDUSTRIES—No new industries established, but some considerable agitation for sugar beet and Portland cement factories, but nothing definite as yet accomplished.

LANDS—Have increased in price from five to seven dollars per acre, and the demand is quite active, with many sales ranging from sixty-five to eighty-five dollars per acre, and some at one hundred dollars and more.

REPORT OF FAIR—Held at West Union, September 4-7. Favorable weather prevailed, and the attendance which was the largest in the history of the society, reached over eleven thousand on Thursday. Special features were an address by United States Senator B. R. Tillman of South Carolina, the reunion for old settlers and the free admission of people over eighty years of age on Thursday. There were fine ball games, and a large number of other amusements in the way of shows and attractions. Exhibits were large and excellent in every department, and especially was this true of the livestock departments. The race features were not so prominent as at many fairs.

This society was the first to offer premiums for good roads, and the result of the competition shows that the amount ($50 set aside for the purpose) was well expended and richly earned, and was a splendid object lesson of what could be done with the King drag.

This society after paying off all of its old debts, and adding improvements during the last year, in which is included a large and commodious dining-hall, has closed the year with a good balance in its treasury, and with confidence and kindly feeling toward the management.

FLOYD.

ROBERT B. UPHAM, CHARLES CITY, OCTOBER 13, 1906.

General Condition of Crops and Season—Small grains and hay rather light; corn above the average crop. Season wet in spring and early summer; fall exceptionally fine; no frost reported until October 1.

Corn—Will average about thirty-five bushels per acre. Well matured.

Oats—Light stand on account of wet weather. Fair quality and yielded about twenty-eight bushels per acre.

Wheat—Small acreage, but of fair quality and average yield.

Rye—Small acreage; yield and quality fair.

Barley—Light stand and yield, quality fair.

Flax—Very little raised.

Buckwheat—Small acreage, but yield and quality good.

Millet—Small acreage, but yielded a good crop.

Sorghum—Practically none raised.

Timothy—Light stand, averaged about one ton per acre.

Clover—Good crop; new seeding exceptionally fine.

Prairie Hay—Good.

Potatoes—Good. Averaged one hundred and seventy-five bushels per acre.

Vegetables—Good.

Apples—Fine.

Other Fruits—Excellent.

Cattle—About the usual number in county and have done exceptionally well on pasture. Fat stock in good condition. Interest in dairy stock is increasing.

Horses—More colts than usual this year, and a general improvement in their breeding. Draft breeds predominate.

Swine—Pig crop light. Lively demand for feeding hogs; about the usual number of brood sows saved.

Sheep—Only a small number raised.

Poultry—In good condition. A noticeable improvment in every line for better stock.

Drainage—No county drainage. Very little tiling done.

Other Industries—Factories engaged in the manufacturing of gasoline engines, furniture, sash, doors, tanks and racks employ about fifty men, and nursery business employing about two hundred.

Lands—Reasonable demand; prices good and advancing.

Report of Fair—Held at Charles City, September 11-14. Was held under the auspices of the Charles City Commercial Club, and the management was well pleased with the results. Exhibits were fine, and unusually large. Largest days attendance was five thousand.

FRANKLIN.

J. W. CUMMINGS, HAMPTON, OCTOBER 3, 1906.

General Condition of Crops and Season—Good. Season favorable to all crops, with no damage by frost to date.

CORN—Drying out well. Will be the best crop raised for years, both in quality and yield.

OATS—An average crop; late ones damaged to some extent by rust.

WHEAT—Small acreage, but yielded well.

BARLEY—Good.

FLAX—Fair.

BUCKWHEAT—Small acreage, but yielded a good crop.

MILLET—Fair.

SORGHUM—Good, but small acreage.

TIMOTHY—Average crop.

CLOVER—Good crop of hay, but not much saved for seed.

PRAIRIE HAY—None raised.

POTATOES—Early varieties yielded a light crop, while the later varieties yielded well.

VEGETABLES—Fine.

APPLES—An abundant crop of early varieties; late varieties light crop, but of good quality.

CATTLE—Have done well. Good feeders scarce.

HORSES—Have done well. Prices high.

SWINE—A good crop of young hogs. Some disease reported.

SHEEP—Not many raised.

POULTRY—Did well. A good supply of young birds.

DRAINAGE—The county is having some ditches dug, which will greatly benefit land in vicinity.

LANDS—Prices range from fifty to one hundred and twenty-five dollars per acre. Not much changing hands.

REPORT OF FAIR—Held at Hampton, September 11-13. Exhibits in all departments were good. A rain on the morning of the best day cut down our attendance some.

GRUNDY.

E. G. ENSMINGER, GRUNDY CENTER, SEPTEMBER 26, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Good. Plenty of moisture and warm weather. Planting and seeding was done in good season. Small grain yielded well, and corn promises to be above the average.

CORN—Acreage large, and conditions have been favorable for its growth and maturity; is much better than last year.

OATS—An excellent crop, yielding from forty to sixty-five bushels per acre, and over-weighing about twenty per cent.

WHEAT—Small acreage, but yielded well, one five-acre field of winter wheat yielding thirty bushels per acre.

RYE—None raised.

BARLEY—An average crop, harvested in good condition.

FLAX—None raised.

BUCKWHEAT—Small acreage only.

MILLET—Very limited amount raised, but grows heavy and is a good crop.

SORGHUM—None raised.

TIMOTHY—Large acreage, and yielded a good crop.

CLOVER—More clover is being sown each year, and the crop this season was very heavy, yielding an abundance of good hay.

PRAIRIE HAY—None raised.

OTHER GRAINS AND GRASSES—Did well.

POTATOES—Acreage large and yielded from two hundred to two hundred and fifty bushels per acre, and were of good quality. Over three hundred car loads will be shipped from here this season.

VEGETABLES—Growth was excessive, and everything matured in good season and was of the best quality.

APPLES—Duchess, Hasp and Wealthy are the varieties grown here most generally, and all yielded a good crop this season.

OTHER FRUITS—Good. Strawberries, raspberries, plums and grapes yielded heavily and of excellent quality.

CATTLE—Receive a great deal of attention and a great many thoroughbreds of different types are raised.

HORSES—One of the most profitable products and this county furnishes as good a market for good horses as any in the state. Buyers for eastern markets have shipped twenty car loads from this point this season.

SWINE—Poland China, Chester White and Duroc Jersey are the principal breeds raised, and much interest is being taken in the proper care of herds and good breeding.

SHEEP—This is becoming more of an industry than in former years. There are some fine flocks in the county, and from five to eight thousand are fed and marketed annually. Many of the feeders are bought in the western states and shipped in.

POULTRY—A profitable part of farming, and farmers are raising great numbers. More attention is being paid to the better breed of birds than in former years.

BEES—Not much attention given to this industry. Many farmers have a few hives, but do not make any special effort along the line of honey production for market.

DRAINAGE—Natural conditions are very good, but farmers are now doing a great deal of sub-drainage, making it possible to cultivate all the flat or slough land, thereby enhancing the value of their farms.

OTHER INDUSTRIES—Creameries and cheese factories are operated successfully, their products being of a good grade and find a ready market at good prices. Two brick and tile works are now operated in the county, and while running at full capacity can not meet the demand for their product.

LANDS—Of the best deep, black loam, with heavy yellow clay sub-soil. Will stand considerable rain, and requires more than the ordinary dry weather to affect the crop. Prices range from eighty-five to one hundred and twenty-five dollars per acre.

REPORT OF FAIR—Held at Grundy Center, September 13-14. The weather on the opening day was favorable, and the entries in every department were heavy. Rain on Wednesday, the second day, interfered with the program and prevented many people from coming. However, the attendance was very satisfactory, considering the weather. On account of the bad weather it was decided to hold over one day longer and close on Friday, the 14th. The weather was more favorable the last two days and the fair as a whole was declared a success.

The speed program was abandoned for lack of entries, of which there were so few that it was decided to declare them off, an action which we regretted we were obliged to do, but under the circumstances could not do otherwise.

The stock exhibits were the largest ever had in the history of our society. Pantry stores and textile fabric departments were crowded with excellent exhibits, showing a decided increase of interest in that line of work.

A good amusement program was provided, and barring the one day of bad weather, visitors were well satisfied with the entertainment.

The concessions were numerous, but nothing was allowed in the way of gambling.

The receipts from gate and amphitheater were larger than last year, and this together with the receipts for concessions amounts to a sum sufficient to pay all expenses and premiums in full and leaving a balance in our treasury. The society feels well satisfied with the result and all consider that the 1906 fair was a success.

GUTHRIE.

ALEX H. GRISSELL, GUTHRIE CENTER, OCTOBER 29, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Good.

CORN—Will average fifty bushels per acre, and is of extra good quality.

OATS—Of good quality and averaged about forty bushels per acre.

WHEAT—Very little raised.

RYE—Small acreage.

BARLEY—Averaged forty bushels per acre.

TIMOTHY—Light crop compared with previous years.

REPORT OF FAIR—Held at Guthrie Center, October 2-5. Favorable weather prevailed, and the exhibits and attendance was up to the standard of previous years. Fifty dollars was devoted to premiums on corn, which caused this exhibit to be large and one of the best at the fair.

HANCOCK.

JOHN HAMMILL, BRITT, SEPTEMBER 18, 1906.

GENERAL CONDITION OF CROPS AND SEASON—The weather was warm and in every way decidedly good for the growing and ripening of crops. Corn is nearly out of the way of frost at this date.

CORN—Best crop in five years. A fairly good stand, standing up well and is well eared. Many fields are ready to gather at this time, and none, except on extremely wet ground, will need more than a week of warm weather in which to fully mature.

OATS—Not heavy in weight but of good quality and yielded around forty bushels per acre, and some especially good fields yielding as high as sixty bushels.

Wheat—Small acreage, but yield and quality above the average.

Rye—Very little raised.

Barley—Good where threshed early. Some barley and oats yet in shock, and is colored badly.

Flax—Smaller acreage than in former years, but yielded a fair crop

Buckwheat—Small acreage, but yielded a good crop.

Millet—Good.

Sorghum—Very little raised except for forage.

Timothy—Good; generally well stacked or in barn.

Clover—Good.

Prairie Hay—Good, and being harvested at the present time. Weather fine until September 15; some rain since.

Potatoes—Some blight, but generally very good. Ample for local demand; very few shipped.

Apples—Light crop. A few hundred bushels shipped, most of the crop being used locally.

Other Fruits—An unusually heavy crop of plums.

Cattle—A greater number than usual, and are in good condition.

Horses—Bring good prices; many shipped out last spring. Farmers are taking more interest in this industry and are breeding better mares, and to stallions nearly all of which are imported.

Swine—Spring crop of pigs a little light, but are in good condition. No disease reported.

Sheep—Very few flocks, but are in good condition.

Poultry—A greater number raised than usual, and are of better strains.

Bees—Good condition, with hives heavily loaded with honey.

Drainage—Receiving more attention than formerly, large tracts being drained by the county and a great deal of tile being laid.

Other Industries—Tile factory running full capacity and output is contracted for in advance.

Lands—Very little changing hands, and prices have remained stationary for the past three years.

Report of Fair—Held at Britt, September 4-6. Fair weather prevailed and the attendance was good. Swine exhibit was the largest ever seen on the grounds, and the exhibits in all live stock and other departments were good. The fair was a success financially and otherwise.

HARDIN.

H. S. MARTIN, ELDORA, OCTOBER 2, 1906.

General Condition of Crops and Season—Good.

Corn—Excellent.

Oats—Good.

Wheat—Good.

Rye—Fair.

Timothy—Good.

Clover—Good.

Potatoes—Fair.

APPLES—Fair.
OTHER FRUITS—Fair.
CATTLE—Good.
HORSES—Good.
SWINE—Good. In a healthy condition.
POULTRY—Good.
REPORT OF FAIR—Held at Eldora, September 4-7.

HARRISON.

W. H. WITHROW, MISSOURI VALLEY, OCTOBER 20, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Weather condition has been very favorable for all crops, with no high winds to blow corn down, as was the case last year.

CORN—Acreage somewhat larger than last year, and the production in the county will be greater than for several years past, everything seeming to favor its growth and maturity. There has been no killing frost to date.

OATS—About the usual acreage, which yielded an average crop of good quality.

WHEAT—Acreage considerably increased over last year, with fall variety predominating. This county is fast becoming a wheat producing county, as the farmers are beginning to realize that as good quality fall wheat can be produced here as in more northern states.

RYE—Usual acreage, with yield and quality fair.

BARLEY—Yield and quality about an average with former years, but is not a very lucrative crop. Very few farmers care to handle it.

FLAX—Very little produced, although the quality is fair.

BUCKWHEAT—Small acreage, but of fair yield and quality.

MILLET—Too wet on low lands for a good crop; higher land produced well. Acreage about an average with former years.

SORGHUM—Average acreage; yield and quality better than last year.

TIMOTHY—Crop very good on the high land, but too much rain early in the spring made a light crop on the low lands.

CLOVER—A good yield on land that was well drained, but drowned out on the low lands.

PRAIRIE HAY—A very heavy crop, but about half of it was ruined by heavy rains at time of cutting and stacking, and as a consequence there will be a scarcity of good hay long before grass grows next spring.

OTHER GRAINS AND GRASSES—Alfalfa did well this year, the rainfall appearing to be just right for it. The acreage was larger than last year, and farmers are beginning to think it is the only cattle feed for cold weather.

POTATOES—About the usual acreage, but yield not so large as previous years, although quality is better.

VEGETABLES—Good. Season was exceptionally favorable.

APPLES—A record breaking crop for this county, and prices are higher than usual. Nearly all producers in this vicinity are barreling their apples and placing them in storage for winter sales.

OTHER FRUITS—Small varieties yielded an average crop and were of good quality. Peaches and pears are not extensively grown, but were of average yield and quality.

CATTLE—Not many being fed in county, although, perhaps, more than a year ago.

HORSES—Breeders are doing better than for the past few years, as evidenced by the fine display of horses, stallions, mares and colts at our recent fair, but there is still plenty of room for improvement. As reported last year, farmers are rapidly arriving at the conclusion that they make a serious mistake in neglecting to look after this industry while attending to the corn crop, and are now endeavoring to raise the standard to where it was a few years ago, by using sires of better breeding.

SWINE—There is no county in the state that produces better hogs than this, and as every farmer is trying to best his neighbor in quality of hogs produced the result is that shipments compare favorably with the older counties in the state both in their breeding and number.

SHEEP—Very few handled in the county, although there is plenty of good feed going practically to waste on account of farmers not paying more attention to this industry.

POULTRY—While there is a good deal of poultry raised in this county the business is not given sufficient attention to be made as profitable as it might be. Some farmers are profiting by raising standard birds, finding a market for them away from home among poultry fanciers. The common barn-yard fowl predominates.

BEES—An average crop of honey of good quality.

DRAINAGE—This question is one that should interest every farmer, for without proper drainage successful crops can not be safely anticipated. Our boards of supervisors of this and neighboring counties have been laboring faithfully for the past two years with a view of constructing, or causing to be constructed, a system of drainage that promises to revolutionize the farming industry, especially on the low lands of the western part of this county. Three dredges are now at work day and night endeavoring to drain all small lakes, sloughs and streams, which have proven a menace to farmers owning land adjacent to the Missouri river valley, and the prospects are that in another year a large acreage of heretofore unprofitable land will be rendered fit to raise from sixty to eighty bushels of corn per acre, such as western Iowa is now noted for.

OTHER INDUSTRIES—There is one small canning factory in this county, the proprietors of which have been very much encouraged this year and intend enlarging next season.

LANDS—Values are about the same as last year, ranging from thirty-five to one hundred dollars per acre, with prospects of a raise in the western part of the county, owing to the drainage work now under way. Some very good sales have been made the past year, but speculators as a rule buying only the cheaper lands.

REPORT OF FAIR—Held at Missouri Valley, October 1-4 The weather was fine for the first three days, but on the last day we experienced a cold raw wind from the northwest that decreased the attendance considerable. October the 1st and 2d were entry days and the 3d and 4th days for entertainment. The attendance on the third was the largest ever had on any one day in the history of the society, all schools in the county being closed in order to give the students an opportunity to attend the fair. The attendance on the fourth was not so large by half as on the day previous, caused by the cold raw wind from the northwest that swept our grounds.

The races were good, although there were but few entries in a class.

Exhibits in the livestock departments were much better than on any previous year, and the cattle barns were inadequate to accommodate the entries. The horse department was well filled, the exhibit of stallions being the best shown on our grounds for several years.

We regret to report that while ours is purely an agricultural fair and is held prinicpally for the pleasure and profit of those engaged in farming pursuits, it is difficult to arouse the proper interest in the exhibition of agricultural products of the farm, and the display in this department at our fair was but meager.

As heretofore there was no intoxicating liquors sold on the grounds, nor were immoral shows or gambling of any kind permitted.

HENRY.

C. M. CLARK, MOUNT PLEASANT, SEPTEMBER 15, 1906.

General Condition of Crops and Season—Good.

Corn—Good.

Oats—Fair.

Wheat—Fair.

Rye—Good.

Barley—Good.

Flax—None raised.

Buckwheat—Small acreage only.

Millet—Excellent crop.

Sorghum—Good.

Timothy—Light crop.

Clover—Light yield.

Prairie Hay—None raised.

Potatoes—Fair.

Vegetables—Good.

Apples—Fair quality.

Other Fruits—Peaches and grapes yielded a large crop.

Cattle—26,941 assessed.

Horses—9,922 assessed.

Swine—27,570 assessed.

Sheep—13,300 assessed.

Lands—Range in prices from forty-five to one hundred and thirty-five dollars per acre.

Report of Fair—Held at Mount Pleasant, August 14-17.

HENRY.

THEODORE RUSSELL, WINFIELD, OCTOBER 24, 1906.

General Condition of Crops and Season—Very dry season; crops fair.

Corn—An average yield and well matured.

Oats—Not up to the average in yield, but were of splendid quality.

Rye—Very little raised.

Barley—None sown.

Flax—None raised.

Buckwheat—Very little grown.

Millet—Only small acreage sown.

Sorghum—Good, but was blown badly by winds at cutting time.

Timothy—Light yield, but of good quality.

Clover—Fair.

Prairie Hay—None raised.

Potatoes—Fair yield and of good quality.

Vegetables—Good.

Apples—Light yield and not of extra quality.

Other Fruits—Peaches yielded an immense crop and were of good quality.

Cattle—Owing to short pasturage they are in thin condition. Many had to feed during the season.

Horses—Are not in very good condition, owing to shortage of pasturage.

Swine—About the average number raised. Very little disease reported.

Sheep—Not many raised, but number is increasing each year.

Poultry—Has done well. A great deal raised, and good prices have been obtained the past season.

Bees—Small amount of honey; season too dry.

Drainage—Good; well tiled.

Other Industries—Are in fairly prosperous condition.

Lands—Are commanding good prices, and it is not surprising that it is so, as crop failures are unknown either in wet or dry seasons. Prices range from eighty to one hundred and forty dollars per acre and are gradually rising. Very little being priced at any figure, and there is a ready sale for that which is.

Report of Fair—Held at Winfield, September 18-21, being the first one held under the new management, an incorporated stock company. The agricultural exhibit was the largest and finest ever seen on our grounds. Everybody attending was well pleased, and the prospects for our 1907 fair are very encouraging. It is our object to have all interests represented, and with the slogan "Pull together" we feel there can be no doubt as to the success of our future fairs. While our receipts were very good, we have been to a great deal of expense in added improvements on the grounds, over two hundred dollars being spent on the race track alone.

HUMBOLDT.

JOHN CUNNINGHAM, HUMBOLDT, OCTOBER 6, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Good. Crops best grown for a number of years.

CORN—Of good quality, and will probably yield an average of forty bushels per acre.

OATS—Of good quality, and yielded from forty to seventy-five bushels per acre.

WHEAT—Yielded from fifteen to thirty bushels per acre, and was of good quality.

RYE—Small acreage, but yielded a good crop.

BARLEY—Very little sown, but yielded a good crop.

FLAX—Small acreage; crop good.

BUCKWHEAT—None grown.

MILLET—Small acreage, but yielded well.

SORGHUM—None grown.

TIMOTHY—Yielded a medium crop, but was badly damaged by heavy rains.

CLOVER—Good crop of hay; very little grown for seed.

PRAIRIE HAY—Yielded well and was put up in good condition.

OTHER GRAINS AND GRASSES—Good.

POTATOES—Average crop.

VEGETABLES—Good.

APPLES—Light yield and of poor quality.

OTHER FRUITS—Grapes, plums and all other small fruit was good.

CATTLE—Are in better than average condition on account of good fall pastures. Some pinkeye reported.

HORSES—In good condition; prices high.

SWINE—Good crop of spring pigs. Very few cases of cholera reported.

SHEEP—Have done well. No disease reported.

POULTRY—The usual large number raised.

BEES—Did well.

DRAINAGE—A great deal has been done during the past year, of mostly county work under public drainage act.

OTHER INDUSTRIES—Flour mills report a good year's business.

LANDS—Have made a slight advance in price during the past year, but very little is on the market. Prices range from sixty to one hundred dollars per acre.

REPORT OF FAIR—Held at Humboldt, September 11-14. Exhibits were good in all departments except cattle and farm products. Weather was threatening and slightly stormy. Quite extensive improvements in the way of buildings were made on our grounds this season. Prospects for the future of our society never looked better.

IOWA.

ALEX MC LENNAN, MARENGO, OCTOBER 22, 1906.

General Condition of Crops and Season—Quality of crops was generally good. No exceptional yields. Season unfavorable for all except corn crop. Very little fall plowing or pasturage, on account of extremely dry weather at latter end of growing season.

Corn—Increase in acreage over last year; is well filled and has not been affected by early frosts. Is of good quality and will yield well.

Oats—Decrease in acreage from last year. Light yield, but of good quality.

Wheat—Small acreage; of excellent quality, and yielded from fifteen to twenty-five bushels per acre.

Rye—Small acreage, but yielded well and was of good quality.

Barley—About half the usual acreage. Splendid quality.

Flax—None raised.

Buckwheat—Very little grown.

Millet—Very little grown.

Sorghum—Small acreage, but yielded a crop of good quality.

Timothy—Very light yield on account of insufficient rains in early part of season, but of excellent quality.

Clover—Very little harvested except for hay, although one field, of alsike variety, made an average yield of five and seven-tenths bushels of seed per acre.

Prairie Hay—None raised.

Potatoes—Average yield and of excellent quality.

Vegetables—Large yield and of good quality.

Apples—Early varieties good, while late varieties are scarce and of poor quality.

Other Fruits—Peaches good in most localities where grown, although there are not a great number of trees in county, but number is increasing each year. Some pear, plum and persimmon trees bore this year.

Cattle—A larger number than usual on exhibition at our fair, and of better breeding and quality. Aberdeen-Angus, Hereford and Short-Horns are the leading breeds here. General condition much below average for feeding purposes, owing to poor condition of pasturage, caused by dry season. Many farmers have had to supplement pasture feeding with grain and fodder for six weeks past.

Horses—Larger number than any previous year. Good demand, and high prices being obtained. Tendency is to raise only the best breeds. A number of western horses have been shipped in, and have met with ready sale at good prices.

Swine—Poland China, Duroc Jersey and Chester White are the favorite breeds raised. Pig crop smaller than last year. No cholera reported. All are well bred and good prices are obtained.

Sheep—Very few in county.

Poultry—Increased interest taken in this industry each year. Plymouth Rock is the favorite breed. A large number were on exhibition at our fair.

BEES—Very few in county.

DRAINAGE—Much land has been reclaimed the past year both by machinery and hand tiling, there being an increase of over one hundred per cent from last year's work of this kind.

OTHER INDUSTRIES—Canning factories and woolen and flour mills report a large increase over last year's business, and are behind with orders. Creameries, of which we have a great number conducted on the co-operative plan, have done an exceptionally good business this year. Brick and tile factories also report a profitable season.

LANDS—A noticeable improvement in methods of cultivation, and more attention being given to fertilizing, as well as improvements in the way of buildings, fènces, etc. Prices range from sixty to one hundred and forty dollars per acre. Much land has been reclaimed by tiling during the past few years.

REPORT OF FAIR—Held at Marengo, September 18-20. Favorable weather prevailed, and the attendance was the largest had for the past four years. Exhibits of live stock, poultry and farm products exceeded in number and quality those at any previous fair in the history of our organization. The machinery exhibit was also large, and the variety was greater than ever before. The fine arts exhibit was the best in years.

IOWA.

J. P. BOWLING, VICTOR, SEPTEMBER 17, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Good.

CORN—Prospects for an exceptionally fine crop.

OATS—Excellent crop.

WHEAT—Very little raised.

RYE—Good.

BARLEY—Good.

FLAX—None raised.

BUCKWHEAT—Very little raised.

MILLET—None raised.

SORGHUM—Very little raised.

TIMOTHY—Medium crop.

CLOVER—Medium crop.

PRAIRIE HAY—Good.

OTHER GRAINS AND GRASSES—Fair

POTATOES—Fair.

VEGETABLES—Good.

APPLES—Large crop.

OTHER FRUITS—Good.

CATTLE—Good.

HORSES—Good.

SWINE—Good.

SHEEP—Not many raised.

POULTRY—Has done well.

BEES—Did well.

REPORT OF FAIR—Held at Victor, August 14-16.

IOWA.

CHAS. FLETCHER, WILLIAMSBURG, OCTOBER 6, 1906.

General Condition of Crops and Season—The amount of rainfall throughout this section was below normal, and especially during the month of May. This caused a shortage in the hay crop, but the quality and the fact that much of it was secured without being damaged will, in a large measure, make up for the deficiency in yield.

Corn—Will be above the average both in yield and quality, as the weather during September was ideal for its maturing.

Oats—An average yield, but of excellent quality.

Wheat—None raised.

Sorghum—Very little cultivated, except in southeast part of county.

Timothy—Fine in quality, but not quite up to the average in yield.

Clover—Weather conditions especially unfavorable for crop, and its scarcity is noticeable.

Prairie Hay—Have not seen any in this section for years.

Potatoes—Not an average yield, but of excellent quality.

Apples—An especially good crop, both in yield and quality.

Other Fruits—An unusually good crop. Peaches especially fine, one orchard reporting a yield of over four hundred bushels.

Cattle—Farmers have fully awakened to the necessity of raising cattle of the highest type in order to secure the best results from high priced land.

Horses—For a number of years this section has been noted for its excellent grade of horses, which standard has been well preserved during the past year.

Swine—Have done well. No disease reported. One hundred and sixty head were exhibited at our fair, representing Poland China, Chester White and Duroc Jersey breeds.

Sheep—Very few in county, and they are mostly of the long wool breeds.

Poultry—Much interest is taken in this industry by the wives of farmers, and the exhibit in this department at our fair was the finest ever seen at a county or district fair.

Bees—Very few in county.

Other Industries—A company was organized here last spring for canning tomatoes, and a factory was built and fully equipped with modern machinery. One hundred acres of tomatoes was contracted, and it seems that the weather conditions were especially favorable for the industry.

Lands—Have increased in value. Prices range from $90 to $150 per acre.

Report of Fair—The Williamsburg Fair Association held its ninth annual exhibition at Williamsburg on September 11, 12 and 13, and from an educational standpoint was a marked success, fully indicating that these yearly agricultural exhibits have effected an evolution in the farming industry. The farmers in this district from which the various products of the farm which were on exhibition were drawn, are enterprising and progressive, and the friendly rivalry brought out a fine display of live stock, vegetables, fruits and various other farm products. In the cattle department there was on exhibition three herds that had exhibited at the State Fair, which, together with an imposing display of many fine individual animals, made the showing in this department by far the best in the history of the society.

Exhibits in the horse department were not as many as there should have been, considering the large number that are raised here, but those on exhibition were of the highest type draft and driving horses and would have been a credit to the exhibition of any State fair. All pens in the swine department were filled and more would have been exhibited if accommodations could have been furnished.

Live stock exhibits, however, are only one feature of our fairs. Educational as they are, the exhibits of agricultural and horticultural products, the floral display, butter and culinary products, farm machinery, etc., are equally important and instructive, and these features at our fair this year called forth the admiration of the awarding committee as well as that of the hundreds of intelligent visitors.

Professor Wayne Dinsmore of Ames did all of our stock judging, and gave universal satisfaction. He also gave a lecture along general agricultural lines, which was highly appreciated by all those who heard him.

In closing this report we are pleased to add that nothing was permitted on the grounds that would tend to immorality, for which the management was extended many compliments.

JACKSON.

B. D. ELY, MAQUOKETA, SEPTEMBER 19, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Season has been exceptionally favorable, and crops were never better.

CORN—We have never had better prospects for a good crop than at present. A large acreage was planted and indications are that it will yield from thirty to sixty bushels per acre. The greater share of it is safe from damage by frost at this date.

OATS—Better than average crop.

WHEAT—Small acreage, but yield and quality good.

RYE—Good.

BARLEY—Small acreage, but yielded a good crop.

BUCKWHEAT—Fine.

MILLET—Good.

SORGHUM—Small acreage, but yielded a crop of good quality.

TIMOTHY—Fine.

CLOVER—Good.

PRAIRIE HAY—Very little raised.

POTATOES—Large yield and of excellent quality.

VEGETABLES—Good.

APPLES—Excellent.

CATTLE—Farms well supplied with stock cattle, and also there are a good many feeders.

Horses—Of good breeding. Prices have ranged higher the past year than ever before.

Swine—Large number and of good breeding.

Sheep—Very few kept, but of good breeding.

Poultry—Has done well. Some very extensive fanciers in this county.

Bees—Quite a large number in county, and did well the past season.

Drainage—Natural condition very good.

Other Industries—This is purely an agricultural county and has not many other industries, excepting an extensive lime works which employs from thirty to one hundred men.

There is a good deal of excitement just now over an oil well found on Sam Earl's farm about five miles northeast of Maquoketa. The oil is pronounced by experts to be of fine quality.

Lands—High in price, ranging from sixty to one hundred dollars per acre.

Report of Fair—Held at Maquoketa, September 4-7. The weather was favorable, exhibits in all departments large, good racing, fine attractions, and the fair was declared a success in every particular.

JASPER.

EMMA LUFKIN, NEWTON, OCTOBER 29, 1906.

General Condition of Crops and Season—Good.

Corn—Above the average.

Oats—Fair.

Wheat—Fair.

Rye—None raised.

Barley—Fair.

Flax—None raised.

Buckwheat, Millet and Sorghum—None raised.

Timothy and Clover—Not as good as usual.

Prairie Hay—None raised.

Potatoes—Yielded an average crop.

Vegetables—Good.

Apples—Below the average crop.

Other Fruits—Average crop. Peaches exceptionally good.

Cattle—Average number raised.

Horses—Not as many as usual.

Swine—The usual number raised.

Sheep—Average number.

Poultry—The usual amount raised.

Bees—Very few in county.

Report of Fair—Held at Newton, September 10-14. Was very successful, considering the weather.

JEFFERSON.

R. C. SAYERS, FAIRFIELD, SEPTEMBER 17, 1906.

General Condition of Crops and Season—Good.

Corn—Above the average crop.

Oats—Not very good.

Wheat—Small acreage, but yielded a crop of fair quality.

Rye—Fair.

Barley—Very little raised.

Flax—None raised.

Buckwheat—Very little raised.

Millet—Good.

Sorghum—Small acreage.

Timothy—Not as large yield as usual, but of excellent quality.

Clover—Did well; more being sown each year.

Prairie Hay—Very little raised.

Potatoes—Good, both in quality and yield.

Vegetables—Good, although some parts of the season was a little too dry.

Apples—Yielded a large crop.

Other Fruits—Extra large crop of peaches; other fruits on an average with crops of former years.

Cattle—Have done well; many fine herds of registered stock in county.

Horses—Have done well.

Swine—Good supply, and are doing well.

Sheep—Although there are not many in this county, they have done well the past season.

Poultry—Several fanciers in this county, and the showing in this department of our fair was excellent.

Bees—Very few kept.

Drainage—A great deal of tiling is being done.

Other Industries—Are in a prosperous condition.

Lands—Price ranges from forty to one hundred dollars per acre.

Report of Fair—Held at Fairfield, September 11-14. Owing to unfavorable weather the attendance was not as large as it otherwise would have been. All departments were well filled with excellent exhibits, and our speed program was unusually good.

JOHNSON.

GEORGE A. HITCHCOCK, IOWA CITY, OCTOBER 16, 1906.

General Condition of Crops and Season—Good.

Corn—Good.

Oats—Averaged about thirty bushels per acre.

Wheat—Good.

Rye—Fair.

Barley—Light yield.

FLAX—None raised.

BUCKWHEAT, MILLET AND SORGHUM—None raised.

TIMOTHY—Good.

CLOVER—Second cutting was very good.

PRAIRIE HAY—None raised.

POTATOES—Good.

VEGETABLES—Good.

APPLES—Good.

OTHER FRUITS—Good.

CATTLE—Have done well. Plentiful.

HORSES—Scarce, and high in price.

SWINE—Good supply. Some disease reported in parts of county.

SHEEP—Not as many as usual.

POULTRY—Plentiful.

BEES—Very few kept.

OTHER INDUSTRIES—Are in a prosperous condition.

LANDS—Range in price from ninety to one hundred and twenty-five dollars per acre.

REPORT OF FAIR—Held at Iowa City, September 10-13. Weather was favorable, attendance and races good, exhibits in every department large, and all premiums have been paid in full.

JONES.

J. J. LOCHER, MONTICELLO, OCTOBER 27, 1906.

GENERAL CONDITION OF CROPS AND SEASON—The season has been longer than usual, no killing frosts having visited this district to date. Crops in general have been exceptionally good.

CORN—Is well out of danger of damage by frosts. About the average acreage was planted, and indications are that the yield will be the largest in the history of this county.

OATS—Good, both in quality and yield. Straw somewhat short.

WHEAT—Small acreage, as it is raised only for home consumption.

RYE—Very little raised.

BARLEY—A good average yield.

FLAX—None raised.

BUCKWHEAT—Very little raised.

MILLET—Small acreage, and yielded a very rank crop.

SORGHUM—Very little raised.

TIMOTHY—Thin stand, but yielded an excellent quality of hay.

CLOVER—Light yield, but of good quality.

PRAIRIE HAY—Very little, if any, raised.

POTATOES—Yielded a large crop and of good quality.

VEGETABLES—Good.

APPLES—An average crop.

OTHER FRUITS—Averaged well with crops of former years. An abundant yield of grapes.

CATTLE—Have done well. Young stock in thriving condition. Grazing especially favorable for milch cows.

Horses—Heavy draft breeds raised principally, for which there is a ready market.

Swine—Have done well. Spring shoats are in a thriving condition. Old sows are all on market.

Sheep—Very few in county.

Poultry—An especially favorable season for raising turkeys. Chickens did well, and the market demand for them is good.

Bees—This industry is not engaged in to any extent except for honey for home use.

Drainage—Good. All land is well tiled.

Lands—Prices steady, ranging from sixty to one hundred dollars per acre for good tillable land.

Report of Fair—Held at Monticello, September 2-7. The attendance was large, and the fair was a very successful one in every particular.

JONES.

J. E. REMLEY, ANAMOSA, OCTOBER 20, 1906.

General Condition of Crops and Season—Good.

Corn—Excellent crop.

Oats—An average crop.

Wheat, Rye and Barley—Very little raised.

Flax—None raised.

Buckwheat—Very little raised.

Millet—Small acreage only.

Sorghum—Small acreage, but yielded a good crop.

Timothy—Light yield, but of good quality.

Clover—Very good.

Prairie Hay—Good.

Other Grains and Grasses—Good. Fall pasturage very good.

Potatoes—Good in yield, quality and price.

Vegetables—Good.

Apples—Yielded a large crop, and were of good quality.

Other Fruits—Good.

Cattle—Are generally in good condition and prices are good.

Horses—Have done well. Prices are high, and many are being shipped.

Swine—Have done well. Prices high, and there is a good demand for shoats.

Sheep—Very few in this county.

Poultry—This industry is increasing rapidly, and is becoming a business of itself. Did well the past season.

Bees—An average crop of honey gathered.

Drainage—Very good. A great deal of tile has been put in.

Other Industries—Have done well.

Lands—Are well farmed, and command high prices.

Report of Fair—Held at Anamosa, August 13-17. The weather was favorable, attendance and attractions good, and with every department represented with excellent exhibits, and particularly horses, the fair was declared a success in every particular.

KEOKUK.

GEO. A. POFF, WHAT CHEER, OCTOBER 13, 1906.

General Condition of Crops and Season—The season was favorable for the production of all kinds of crops.

Corn—Best crop in years; will yield from forty to seventy bushels per acre.

Oats—Of good quality, and yielded from thirty to thirty-five bushels per acre.

Wheat—Small acreage, but yielded a very good crop.

Rye—Small acreage.

Barley and Flax—Very little raised.

Buckwheat—Small acreage.

Millet—None raised.

Sorghum—Small acreage.

Timothy—A heavy yield, and was generally put up in good condition.

Clover—Large acreage, and yielded an excellent crop.

Potatoes—Good, both in quality and yield, and are selling at fifty cents per bushel.

Vegetables—Did well.

Apples—A large crop of most varieties; selling at from thirty to forty cents per bushel.

Other Fruits—Raspberries, medium yield; blackberries, large yield; peach crop very large and of the best quality.

Cattle—A great deal of interest is being taken in the breeding of fine cattle in this county, and there are several exceptionally fine herds of Short-Horns and Polled Angus.

Horses—Have done well. There are several large breeders in this county.

Swine—A great many raised. Several well-bred herds in this vicinity.

Sheep—Have done well. Not so many raised as in former years.

Poultry—A great deal raised. Some very fine birds on exhibition at our fair.

Bees—Quite a number kept, and they did well the past season.

Drainage—More tile has been laid the past year than any former year.

Lands—Range in price from seventy-five to one hundred dollars per acre.

Report of Fair—Held at What Cheer, September 24-27, and was the most successful exhibition ever held by this society. There were over seven thousand paid admissions on Thursday, September 27. Every department was filled with excellent exhibits, and the races were the best had for several years. Fifteen hundred dollars was spent for improvements on the grounds this year.

KOSSUTH.

T. H. WADSWORTH, ALGONA, OCTOBER 10, 1906.

General Condition of Crops and Season—Although the season was a little too wet, crops as a whole have been very good.

CORN—An excellent crop, as good as this county has ever produced.

OATS—A good crop, but were discolored some by wet weather.

WHEAT—Small acreage, but yielded a good crop.

RYE—Very little raised.

BARLEY—A good crop, some yielding as high as sixty bushels per acre.

FLAX—None raised.

BUCKWHEAT—Very little raised.

MILLET—A good average crop.

SORGHUM—None raised.

TIMOTHY—Not quite up to the average crop.

CLOVER—Light crop.

PRAIRIE HAY—Not as good as usual.

POTATOES—Fair.

VEGETABLES—Good.

APPLES—A good crop of summer and fall varieties.

CATTLE—In good condition, and bringing good prices.

HORSES—High in price, and are being purchased by eastern buyers.

SWINE—Some spring pigs were lost, but there is still quite a number left, and they are doing well.

SHEEP—Have done well.

POULTRY—Is getting to be one of the largest industries of the county. Quite a number are raising thoroughbred strains of birds.

BEES—Have done well.

DRAINAGE—A great deal of tiling is being done here; also, some open ditches are being dug in the northern part of the county.

LANDS—Range in price from sixty to eighty dollars per acre.

REPORT OF FAIR—Held at Algona, September 11-14, and was a success. About six thousand dollars has been expended for new buildings on our grounds within the past two years.

LEE.

C. L. PEBLER, WEST POINT, SEPTEMBER 27, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Very good.

CORN—Fair to good. Practically all is out of danger of damage by frosts at this time.

OATS—Good quality.

WHEAT—Small acreage, but yielded a good crop.

RYE—Good crop, but acreage small.

BARLEY AND FLAX—None raised.

BUCKWHEAT—Very little raised.

MILLET—Good.

SORGHUM—Good, but short yield on account of dry weather.

TIMOTHY—Light yield, but of good quality.

CLOVER—Well filled with seed.

PRAIRIE HAY—None raised.

POTATOES—Good.

VEGETABLES—Fair.

APPLES—Good.

OTHER FRUITS—Good.

CATTLE—Are in good condition.

HORSES—Are doing well.

SWINE—Have done well.

SHEEP—Did well.

POULTRY—Has done well.

BEES—Did poorly on account of dry season.

LANDS—Are advancing in price.

REPORT OF FAIR—Held at West Point, August 28-30. Attendance good.

LEE.

CHRIS. HAFFNER, DONNELLSON, OCTOBER 3, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Good.

CORN—Of good quality, and will average fifty bushels per acre.

OATS—Good quality, but yield light, owing to dry season.

WHEAT—Yielded twenty-five bushels per acre, and of the best quality ever raised.

RYE—Of good quality and yielded on an average of twenty bushels per acre.

BARLEY, FLAX, BUCKWHEAT AND MILLET—None raised.

SORGHUM—Good.

TIMOTHY—Of good quality, but yielded only about a half crop, owing to dry season.

CLOVER—Light yield.

PRAIRIE HAY—None raised.

POTATOES—Quality good, but light yield.

VEGETABLES—Good.

APPLES—Good crop.

OTHER FRUITS—Yielded well. An especially large yield of peaches.

CATTLE—Short-Horn and Polled Angus are the principal breeds raised.

HORSES—Demand for heavy drafters is good. Prices range from one hundred and fifty to four hundred dollars.

SWINE—No disease reported. Poland-China breed predominates, although there are a number of Chester White and Duroc Jersey raised.

SHEEP—Are raised quite extensively; middle wool breeds predominate.

POULTRY—Has been very profitable, and there is a noticeable improvement in the quality being raised.

BEES—Very few kept.

DRAINAGE—Natural conditions are very good.

LANDS—Range in price from sixty to one hundred dollars per acre. Quite a number of farms changing hands.

REPORT OF FAIR—Held at Donnellson, September 5-7. The weather was the most favorable we have had for several years, and as a result the attendance was very good. Exhibits in all departments were good except in the cattle department, which was a little below the average.

LINN.

EDWIN HEATON, FAIRFAX, OCTOBER 1, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Considerable rainy weather prevailed the forepart of the season, while the latter part was rather dry, causing a shortage of pasturage. However, crops in general have been very good.

CORN—Is in excellent condition, and indications are for a big crop.

OATS—Fair yield and of good quality.

WHEAT—Small acreage, but yielded a crop of good quality.

RYE—None raised.

BARLEY—Small acreage, but yielded well.

FLAX—None raised.

BUCKWHEAT—None raised.

MILLET—Small acreage.

SORGHUM—Fair yield and of good quality.

TIMOTHY—Light yield, but of good quality.

CLOVER—Old seeding yielded a poor crop, while new seeding yielded a good one.

POTATOES—Fair.

VEGETABLES—Good quality and large yield.

APPLES—Excellent yield and of good quality.

OTHER FRUITS—Very plentiful.

CATTLE—In fine condition.

HORSES—Principally draft breeds raised, for which there is a ready sale at good prices.

SWINE—A large number raised, and are in a healthy condition.

SHEEP—Not many raised.

POULTRY—Raised quite extensively, and a noticeable improvement in breeding.

BEES—A poor season for the production of honey.

DRAINAGE—Very little artificial work of this nature being done in this county.

LANDS—Range in price from seventy to one hundred and twenty-five dollars per acre.

REPORT OF FAIR—Held at Fairfax, September 4-7. The attendance was very good, but not quite so good as expected, owing to the weather being extremely hot and roads dusty, keeping some at home. Exhibits in all departments were good.

LINN.

E. E. HENDERSON, CENTRAL CITY, OCTOBER 4, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Good. All crops out of the way of damage by frosts at this time.

CORN—Splendid crop. Best for years, both in quality and yield. Practically all out of danger from damage by frosts at this date.

OATS—Fair yield, but of good quality.

WHEAT—Very little raised.

Rye—Small acreage, but fair crop.

Barley—Small acreage, but good yield.

Flax—None grown.

Buckwheat—Very little grown.

Millet—Small acreage, but yielded an excellent crop.

Sorghum—Practically none grown.

Timothy—Light yield, but of excellent quality.

Clover—Average yield of good quality.

Prairie Hay—Very little grown.

Potatoes—Of good quality, and yielded about one hundred bushels per acre.

Apples—Good yield and fair quality. None grown for export.

Cattle—In fine condition. Pastures good all season. Majority of farmers have dairy herds and sell milk and cream to the creameries.

Horses—Scarce and high in price. Everybody is raising colts. A good number of high class pure bred stallions in county.

Swine—Not hardly up to the usual average in numbers. In good demand. No cholera or other disease reported.

Sheep—Few in number and high in price.

Poultry—A prominent industry, and large numbers are shipped annually.

Drainage—A great deal of tile drainage has been done the past season, the local works at Central City supplying principally all the material used.

Lands—Very little changing hands. Prices range from sixty-five to one hundred and twenty-five dollars per acre.

Report of Fair——Held at Central City, September 11-14, and was one of the most successful ever held in the county, the attendance being exceptionally large and many added features. The special corn exhibit, with Professor Holden in charge, created much interest, as did also the students' judging contest. The live stock exhibit was pronounced by Professor Thomas Shaw to be the best that he had ever seen outside of a State fair. Our fair has discontinued the racing programme, with the most satisfactory results. The fair was a financial success, as well as pleasing all those in attendance.

LOUISA.

J. R. SMITH, COLUMBUS JUNCTION, SEPTEMBER 20, 1906.

General Condition of Crops and Season—The season has been favorable. Local showers were well distributed and generally sufficient in quantity, except a lack of sufficient rain in the month of June shortened the hay and oat crop to some extent.

Corn—In excellent condition, very near all being safe from danger of damage by frosts at this date. It is estimated that the yield will average ninety-five per cent of a full crop.

Oats—Light yield, and not of the best quality. Sixty per cent.

WHEAT—Small acreage. One section of the county produces considerable winter wheat, and the past season yielded a crop of good quality. Eighty per cent.

RYE—Not a large acreage sown.

BARLEY—Grown mostly for feed, and yielded a crop of good quality the past season.

FLAX—None raised.

BUCKWHEAT—Very little grown.

MILLET—Good, both in quality and yield.

SORGHUM—Small acreage, but yielded a crop of good quality.

TIMOTHY—Light yield, but of good quality.

CLOVER—Old meadows were a failure, while new meadows did fairly good.

PRAIRIE HAY—None raised.

POTATOES—Quality good, but yielded only moderately well.

VEGETABLES—Fair yield and good in quality.

APPLES—A large yield, but damaged to some extent by insects.

OTHER FRUITS—Peaches yielded the largest crop in the history of the county and were of good quality.

CATTLE—Condition is first class in every respect.

HORSES—In good condition, and good animals command high prices.

SWINE—In a good, healthy condition.

SHEEP—Very few in county, but are in good condition.

POULTRY—Condition and prices good.

BEES—Did poorly. Honey crop a failure.

DRAINAGE—More than the usual amount of both open and tile drainage has been done the past season.

OTHER INDUSTRIES—The canning factory at Wapello has done a good business, putting up a million and a half cans of sweet corn the past season, in addition to other products. The button cutting factory at Columbus Junction has forty saws running.

LANDS—Prices remain firm.

REPORT OF FAIR——Held at Columbus Junction, September 4-7, and was successful in every respect. The attendance was large, and the finances of the society will show a balance on the profit side of the ledger.

LOUISA.

C. R. WALLACE, WAPELLO, OCTOBER 10, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Good.

CORN—Good. About 90 per cent of standard.

OATS—Yielded a good crop, but short straw.

WHEAT—Small acreage, but yield and quality good.

RYE—An excellent crop.

BARLEY AND FLAX—None raised.

BUCKWHEAT—Good.

MILLET—Small acreage, but yielded a fair crop.

SORGHUM—Good.

Timothy—A short crop, on account of dry season.

Clover—Dry season caused shortage in yield.

Prairie Hay—None raised.

Other Grains and Grasses—Fair to good.

Potatoes—An excellent yield.

Vegetables—Plentiful.

Apples—Excellent yield.

Other Fruits—Good. Cherries and peaches, excellent.

Cattle—Are in a healthy condition, and there is a noticeable improvement in their breeding.

Horses—Have done well.

Swine—Are doing well. No disease reported.

Sheep—Are in good condition.

Poultry—Did well.

Bees—Only a few hives left in this county, but good results were obtained the past season.

Drainage—Is being improved.

Other Industries—Are in a progressive condition. A great deal of sweet corn is raised and canned here.

Lands—Prices advancing.

Report of Fair—Held at Wapello, September 25-28. While it rained on Friday, we were favored with good weather on two days, and the fair was the most successful one ever held by this association. There was a special corn exhibit, which was pronounced by many as being the finest in the State.

LYON.

A. S. WOLD, ROCK RAPIDS, OCTOBER 20, 1906.

General Condition of Crops and Season—Crops generally good, both in yield and quality. Season wet at times, rainfall being: April, 2.04 inches; May, 2.23 inches; June, 5.65 inches; July, .92 of an inch; August, 3.65 inches; September, 3.75 inches; total for season, 18.25 inches.

Corn—Quality the best in years, and will yield an average of thirty-eight bushels per acre. Estimated acreage, 90,000.

Oats—Yield and quality good. Overrun in weight on machine measure from fifteen to twenty-five per cent. Average yield, forty-seven bushels per acre. Estimated acreage, 90,000.

Wheat—Good quality, averaging twelve bushels per acre. Estimated acreage, 12,000.

Rye—Good quality, and yielded an average of thirty-two bushels per acre. Small acreage, estimated at 1,000.

Barley—Fair quality and weight. Colored to some extent. Averaged twenty-seven bushels per acre. Estimated acreage, 70,000.

Flax—Average yield ten bushels per acre. Estimated acreage, 1,000.

Timothy—Good yield.

Clover—Yielded a good crop.

Prairie Hay—Small acreage, but was a good crop the past season.

OTHER GRAINS AND GRASSES—Land in tame hay and pasturage the past season estimated at eighty-five thousand acres in this county.

POTATOES—Best in years.

APPLES—Yield and quality the best in the history of this county.

OTHER FRUITS—Cultivated plums, cherries and grapes yielded the best crop ever raised. Raspberries, strawberries and gooseberries yielded large crops.

CATTLE—Large increase over last year. More cattle will be put into the feed lots than for several years. The dairy business was the most prosperous in years.

HORSES—Heavy demand. Large increase in breeding over last year.

SWINE—Large increase. No disease reported.

SHEEP—Increase in the number raised. Last year there were fed and shipped from this county eighty thousand head of western sheep, and this year there will be from sixty to seventy thousand.

POULTRY—Fully twenty per cent increase over last year in amount raised.

DRAINAGE—Very little needed, natural conditions being very good.

LANDS—Sales made this season were at prices ranging from sixty to eighty-five dollars per acre.

REPORT OF FAIR—Held at Rock Rapids, September 18-21, being the first annual fair of our organization, the Lyon County Fair and Agricultural Society. The weather was very unfavorable, it raining three days out of the four on which our fair was held. The attendance was thirteen thousand, which was very encouraging, considering the weather. We will make some improvements on our grounds the coming year.

MADISON.

A. L. FOSTER, WINTERSET, OCTOBER 27, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Crops have been generally good, being much better than the general average, except in a few localities where the rainfall was not sufficient. The season, as a whole, was an ideal one, being dry through the month of June, and was exceptionally favorable for the cultivation of the growing crops, killing off the weeds and putting the ground in excellent condition.

CORN—Larger acreage than usual, of good quality, being well matured, and would estimate that average yield would be forty-five bushels per acre. Some pieces, where planted on newly broken ground, will yield an average of sixty bushels per acre.

OATS—Of good quality, and yielded from twenty to forty bushels per acre. Straw was short, but well filled.

WHEAT—Small acreage, but yielded a crop of fair quality.

RYE—Good in quality, but acreage small.

FLAX, BUCKWHEAT AND MILLET—None raised.

SORGHUM—Small acreage, but yielded a crop of good quality.

TIMOTHY—Quality good. A little light in yield, but was put up in good condition. Yielded from one to one and one-half tons per acre.

CLOVER—Quality good. A great many cutting a second crop for seed, and which seems to be well filled.

PRAIRIE HAY—Quality good. Only a small amount in this county, as nearly all such land is used for pasturage.

OTHER GRAINS AND GRASSES—Pastures are mostly of bluegrass, for which the past season was favorable except in a few localities, where it was too dry.

POTATOES—Quality good, but only about a half crop of the late varieties, while the early planted ones were much better, as the bugs did not bother them.

VEGETABLES—Did well.

APPLES—Good yield, but of only fair quality, there being a great many damaged by worms, etc.

OTHER FRUITS—Peaches were quite abundant, and some as fine specimens as were ever grown in this county. Cherries, raspberries and strawberries were plentiful.

CATTLE—Their condition is good, except in the dry districts. Quite a number of farmers are raising pure bred stock of different breeds, and they are selling at good prices, being higher than usual.

HORSES—Quality only fair, the demand for good horses being so great that they have nearly all been sold. Prices are the highest ever known here, ranging from one hundred and seventy-five to two hundred dollars per head.

SWINE—Not an overly large number raised, and quite a number lost by cholera, there being some localities where it is quite prevalent. Pure bred hogs are raised extensively and sell at good prices.

SHEEP—Not many raised in this county, but are generally of good quality.

POULTRY—A large amount raised, except of turkeys, which seem to be very scarce this year.

BEES—Did well the early part of the season, as there was an abundance of white clover.

DRAINAGE—There was more tile used the past year than ever before, and with splendid results. A tile factory has been started near Winterset, which will be of great benefit to the county.

OTHER INDUSTRIES—There have been only a few residences built during the season, but quite a number of barns and corn cribs. Cement walks are fast taking the place of board one, and cement watering tanks, cisterns, caves, posts and blocks for building purposes are being used extensively.

LANDS—have advanced in price the last year, and now range from sixty-five to one hundred and fifteen dollars per acre.

REPORT OF FAIR—Held at Winterset, September 25-27, and was one of the best fairs ever held in this county. The exhibits were good in all departments and classes, and the premiums offered were liberal and all paid in full. The attendance was good, and more interest was shown by farmers, and everyone else in attendance, than for a number of years.

MAHASKA.

T. R. OSBORNE, NEW SHARON, SEPTEMBER 25, 1906.

General Condition of Crops and Season—The season was very favorable and crops have been generally good.

Corn—A good average with crops of past five years.

Oats—Very good yield and of splendid quality.

Wheat—Small acreage, but of good quality.

Rye—Light yield.

Barley—Good, although damaged to some extent by bleaching.

Flax and Buckwheat—None raised.

Millet—Very little grown.

Sorghum—Small acreage, but yielded a good crop.

Timothy—Good. The seed crop was the best in years.

Clover—Large acreage, but hay crop was cut short in yield to some extent by dry weather. The seed crop was very good.

Prairie Hay—None raised.

Other Grains and Grasses—Dry season caused bluegrass pastures to be short, but late pasturage has improved some by rains.

Potatoes—Both early and late varieties were of good quality, but the yield was not large.

Vegetables—Very good.

Apples—An abundant crop; fall varieties never better.

Other Fruits—Good crop of cherries; peaches only fair, the dry season affecting their growth.

Cattle—Are generally in good condition.

Horses—A noticeable improvement in their breeding. Are in good demand and prices high.

Swine—Are in good condition.

Sheep—Demand is increasing.

Poultry—More interest is being taken in the breeding of pure bred birds. Prices are high.

Bees—Very few in county. Honey crop light the past season.

Drainage—More tiling done than ever before.

Lands—Range in price from seventy-five to one hundred and twenty-five dollars per acre.

Report of Fair—Held at New Sharon, September 18-21. The attendance was the best in the history of the society, and all departments were crowded with excellent exhibits.

MARION.

T. D. TICE, PRESIDENT, PELLA, OCTOBER 22, 1906.

General Condition of Crops and Season—While the latter part of the season was very dry, crops generally are better than the average of the past three years.

Corn—Acreage increased. Quality will rate as No. 2 on Chicago market. Average yield forty bushels per acre.

OATS—Acreage below the average; quality good; average yield, thirty-seven and one-half bushels per acre.

WHEAT—Very little sown; quality better than for a number of years past; average yield per acre, spring variety, sixteen bushels; winter variety, twenty bushels.

SORGHUM—Very little raised; quality above the average.

TIMOTHY—Light yield, but of extra good quality.

CLOVER—Usual acreage; season too dry for a successful crop.

PRAIRIE HAY—None raised.

OTHER GRAINS AND GRASSES—Pastures were good in the early spring, while later in the season the weather was too dry, and winter pasturage is very short.

POTATOES—Smaller acreage than usual, and crop is below average.

VEGETABLES—Fresh varieties did well, while the season was a little too dry for the winter varieties.

APPLES—Above the average crop, both in quality and yield.

OTHER FRUITS—Plentiful and of good quality. Peaches did exceptionally well.

CATTLE—Supply of both stockers and feeders is about ten per cent short of previous year. In fair condition.

HORSES—Are in fair condition, and an increase in the number of colts produced. Prices are high.

SWINE—Their number is below the average, marketable animals having been shipped out very closely. Healthy condition prevails.

SHEEP—Only a few are kept.

POULTRY—Large amount is raised, and more attention is being given to improving the breeds. Only a few chicken fanciers in county.

BEES—A scattering number of hives only.

DRAINAGE—County is quite well drained.

OTHER INDUSTRIES—All seem to be in a booming condition. Farm help is scarce and wages are high.

LANDS—Range in price from eighty to one hundred dollars per acre, and where near to towns command even higher figures. Heavy investments are being made from this county in northwest and southwest lands.

REPORT OF FAIR—Held at Pella, October 2-5, and the attendance was the largest in the history of our society. All those in attendance were well pleased. The several committees appointed by the president performed their duties at all times, and there was no friction whatever, all aiming to do what was necessary to make the fair a success, in which we were not disappointed. The weather being favorable assisted us very materially. As a recipe for an organization to successfully conduct a county or district fair I would give the following: Have good officers and committees, each striving for success. Avoid friction and self-praise, and remember that one man alone can not make a successful fair. Do whatever is promised. Treat your patrons courteously and success will crown your efforts, especially if you are located near one of Iowa's best cities, to-wit: Pella.

MARSHALL.

W. M. CLARK, MARSHALLTOWN, OCTOBER 20, 1906.

GENERAL CONDITION OF CROPS AND SEASON—All crops are above the average of former years. The season has been almost perfect, there being no high winds, and cornstalks are standing erect.

CORN—Will average fifty-five bushels per acre, while some farms will yield as high as one hundred bushels per acre. It is of A-1 quality, all sound and perfectly ripe, without any damage whatever from frost, and is about seventy-five per cent of a full stand.

OATS—Of fine quality and yielded about fifty bushels per acre.

WHEAT—Winter wheat was excellent, of No. 1 grade, and averaged twenty-seven bushels per acre, some pieces yielding as high as thirty-five bushels per acre. Spring variety was of No. 2 grade in quality and yielded about fifteen bushels per acre.

RYE—Small acreage, No. 2 grade in quality, and yielded on an average forty bushels per acre.

BARLEY—Of fine quality, and yielded forty bushels per acre. Acreage estimated at five hundred acres.

FLAX AND BUCKWHEAT—None grown.

MILLET—Small acreage, but yielded an excellent crop.

SORGHUM—Acreage small, but yielded a good crop.

TIMOTHY—Of fine quality, and yielded about eight bushels of seed per acre.

CLOVER—The second growth yielded a fine crop of hay, but was lacking in seed. The first growth contained more seed than the second.

OTHER GRAINS AND GRASSES—A few fields of alfalfa were sown, which promise well. Some fields have been cut three times, yielding one and one-half tons per acre at each cutting.

POTATOES—Of good quality and large yield, ranging from one hundred and fifty to three hundred bushels per acre.

VEGETABLES—Fine.

APPLES—Yielded a large crop of excellent fruit. About one hundred car loads have been shipped out of the county.

OTHER FRUITS—Plums, cherries and other small fruits yielded a good crop of fine quality.

CATTLE—Season exceptionally favorable for them, there being an abundance of good pasturage.

HORSES—High in price, and much interest is manifest in the breeding of draft horses.

SWINE—Are in a healthy condition and bringing satisfactory prices. A large number being fed for market.

SHEEP—There is an increased interest being taken in this industry, both in the number and quality of their breeding.

POULTRY—An abundance, and many fine birds. Prices are low and not very satisfactory.

BEES—A very small industry in this county.

DRAINAGE—Natural conditions very good.

OTHER INDUSTRIES—A packing house, using from five to six hundred head of hogs per day and some cattle; a pickle and vinegar works, using the products of three hundred acres of cucumbers, onions, etc., and a canning factory, using the product of five hundred acres.

Lands—Are improving in quality by reason of more intelligent farming, and prices range from sixty-five to one hundred and twenty-five dollars per acre.

Report of Fair—Our first annual county fair was held at Marshalltown, September 18-21, with fine exhibits in all live stock departments except sheep, of which there are but few flocks in the county, and the attendance reached upward of twenty thousand. A stock company was organized in June, 1906, with capital stock of ten thousand dollars ($10,000), nearly all of which was sold, forty (40) per cent being paid in cash. The society erected five substantial buildings, have an improvement account of forty-two hundred dollars ($4,200), of which there is about twelve hundred ($1,200) in cash on hand. At a meeting of the stockholders since the holding of the fair it was voted, without a dissenting vote, to increase the capital stock to thirty thousand dollars ($30,000), sell the same and purchase the grounds used the past year.

MARSHALL.

H. F. STOUFFER, RHODES, OCTOBER 19, 1906.

General Condition of Crops and Season—Good.

Corn—Of good quality, and will yield above an average crop.

Oats—Fair quality, and above the average in yield.

Wheat—Slightly above the average of former years.

Rye, Barley, Flax, Buckwheat, Millet and Sorghum—None raised.

Timothy—An average crop.

Clover—Good average crop.

Prairie Hay—Very little raised.

Potatoes—Good average crop, both in quality and yield.

Vegetables—Above the average crop.

Apples—Early varieties yielded a good crop, while of late varieties there are very few.

Cattle—A large per cent of the cattle here are thoroughbred and pedigreed, and those that are not are high grade. Short-Horns predominate.

Horses—While there are some few drivers, principally large horses are raised, of the draft breeds.

Swine—A great deal of attention is given to raising of hogs, nearly all farmers using pure bred boars. The principal breeds raised are Poland-China, Chester White and Duroc Jersey.

Sheep—Very few, but are of a good grade.

Poultry—All classes are of good quality.

Bees—Very few kept.

Drainage—A great deal of tiling has been done.

Lands—Are advancing in price, and now range from seventy-five to one hundred and ten dollars per acre.

Report of Fair—Held at Rhodes, October 2-4.

MILLS.

J. T. WARD, MALVERN, OCTOBER 13, 1906.

GENERAL CONDITION OF CROPS AND SEASON—All crops have done exceptionally well, with the exception of hay and early potatoes which were cut short by dry weather.

CORN—Of good quality, and many fields will yield seventy-five bushels per acre, and some even more than this, while there will be none that will yield under thirty bushels.

OATS—Of fair quality, and yielded from twenty-eight to fifty bushels per acre.

WHEAT—Yielded from seventeen to fifty-four bushels per acre.

RYE—Yielded about twenty-three bushels per acre.

BARLEY—Yielded from fifteen to fifty bushels per acre.

MILLET—Small acreage, but yielded a good crop.

SORGHUM—Very little planted, but yielded a good crop.

TIMOTHY—Yielded from fifty to sixty per cent of the average crop, but was of good quality.

CLOVER—First cutting was light while the second cutting was very good and well filled with seed.

PRAIRIE HAY—Of good quality and about seventy-five per cent of the average yield.

OTHER GRAIN AND GRASSES—Late pasturage very good.

POTATOES—Not to exceed fifty per cent of the average crop.

VEGETABLES—Very good.

APPLES—Largest crop ever produced in this county.

OTHER FRUITS—Peaches plentiful, and all other fruits good, except plums.

CATTLE—Are in excellent condition. Feeding operations are extensive, and there are a goodly number of pure breds raised.

HORSES—A good grade of horses are raised in this county, and a great many are shipped out annually.

SWINE—A great many raised and shipped each year.

POULTRY—The hen is the property of the housewife, who sees that she does her duty and brings large returns.

BEES—Very few kept.

OTHER INDUSTRIES—Are all in a prosperous condition.

LANDS—Are all excellent for agricultural purposes, and prices range from seventy-five to one hundred and forty dollars per acre.

REPORT OF FAIR—Held at Malvern, September 11-13. While the attendance was light, all premiums were paid in full. Our society has a small indebtedness.

MONONA.

A. W. BURGESS, ONAWA, OCTOBER 25, 1906.

GENERAL CONDITION OF CROPS AND SEASON—The season was very favorable and crops generally have been very good.

CORN—Will yield from forty to forty-five bushels per acre.

OATS—Yielded from thirty to forty bushels per acre.

WHEAT—Winter variety yielded from twenty to fifty bushels per acre, while the spring variety yielded from eight to eighteen bushels per acre.

RYE—Small acreage, which yielded from twenty to twenty-two bushels per acre.

BARLEY—Small acreage, yielding from twenty to thirty bushels per acre.

FLAX—Small acreage; yielded from ten to twelve bushels and a half per acre.

BUCKWHEAT—None raised.

MILLET—Very small acreage; none threshed.

SORGHUM—Good yield, but acreage small.

TIMOTHY—Small acreage. None threshed for seed.

CLOVER—Small acreage. None threshed.

PRAIRIE HAY—Yielded from one and one-half to two tons per acre, and was of good quality.

OTHER GRAINS AND GRASSES—Acreage of alfalfa is increasing, and the past season yielded from three to five tons per acre.

POTATOES—A large acreage planted, and yielded from one hundred and fifty to two hundred and fifty bushels per acre.

VEGETABLES—A large acreage of onions was planted which yielded from three to four hundred bushels per acre.

APPLES—Yielded a good crop.

OTHER FRUITS—Good crop of all small varieties.

CATTLE—Quite a number are being shipped in for winter feeding.

HORSES—Quality of breeding is improving. A great many are being bought and shipped to other markets.

SWINE—Large increase in the number raised, and a great many are dying with some kind of a disease that is not cholera.

SHEEP—Very few in county.

POULTRY—Doing well, and increase is large.

BEES—There is a good supply of honey, and the quality is good.

DRAINAGE—Much activity along this line. Work on the large canal, which is partly finished, has been stopped by an injunction; the small ditch in the west part of the county is nearly finished, and another ditch is to be dug in the north central part of the county.

LANDS—Prices remain firm, ranging from fifty to one hundred dollars per acre.

REPORT OF FAIR—Held at Onawa, September 5-7, and was successful in every particular.

MONTGOMERY.

W. W. MERRITT, RED OAK, OCTOBER 15, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Above the normal.

CORN—Above normal.

OATS—Usual crop.

WHEAT—Spring variety good, winter variety excellent.

RYE—Very little raised.

BARLEY AND FLAX—None raised.

BUCKWHEAT—Average crop.

MILLET—Fairly good.

SORGHUM—None raised.

TIMOTHY—Below average crop.

CLOVER—Fair.

PRAIRIE HAY—None grown.

POTATOES—Light crop.

VEGETABLES—Good.

APPLES—Excellent.

OTHER FRUITS—Small varieties in abundance.

CATTLE—Are in fair condition.

SWINE—Doing well.

SHEEP—Very few kept.

POULTRY—Have done well.

BEES—Fair.

DRAINAGE—Good.

LANDS—The best in the State.

REPORT OF FAIR—Held at Red Oak, August 20-23. There was a good display of farm products, and the exhibits in the swine, cattle and horse departments were excellent.

MITCHELL.

W. H. H. GABLE, OSAGE, OCTOBER 19, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Crops have been excellent, although the forepart of the season was very wet. The weather the latter part of the season has been favorable for all crops especially corn, which fully matured without being damaged by frosts.

CORN—Excellent crop, fully matured without damage from frosts; acreage not as large as usual.

OATS—Good quality and fair yield.

WHEAT—Very little raised.

RYE—Fine average crop.

BARLEY—Small acreage, but yielded a crop of good quality.

FLAX—Fair crop, but acreage small.

BUCKWHEAT—Small acreage, but yielded a crop of good quality.

MILLET—Good.

SORGHUM—Very little raised.

TIMOTHY—Good crop.

CLOVER—Average crop.

PRAIRIE HAY—Very little grown.

OTHER GRAINS AND GRASSES—Good.

POTATOES—A fairly good yield of excellent quality.

VEGETABLES—Above the average crop.

APPLES—A good crop.

OTHER FRUITS—All small varieties yielded an abundant crop.

Cattle—Are in good condition. Nearly all our farmers are breeders of cattle, and the Short-Horn breed predominates.

Horses—Renewed activity is noted in the breeding and raising of horses. Prices are high.

Swine—There is a noticeable increase in the number raised. No disease reported.

Sheep—Are raised to quite an extent in this county, and many are shipped in and fed for the market.

Poultry—A growing and profitable industry.

Bees—Very few in this county, but did well the past season.

Drainage—More attention is being given to tiling than in former years.

Lands—Prices are gradually increasing, and there is quite a demand from eastern farmers for land in this county, as none better is found in the State.

Report of Fair—Held at Osage, September 18-20. As far as exhibits were concerned it was the best ever held in the county. The attendance on the second day exceeded that of any previous day in the history of our society, but rainy weather prevailing on the third and last day, the result was a small attendance. No games of chance or disreputable shows were allowed on the grounds. Exhibits were good in all departments, and especially in the floral and educational halls. The live stock exhibits were exceptionally fine, and was judged by an expert from Ames, to the entire satisfaction of all.

The farmers of this county are contented, happy and prosperous.

MUSCATINE.

W. H. SHIPMAN, WEST LIBERTY, OCTOBER 22, 1906.

General Condition of Crops and Season—Excellent in every respect.

Corn—First class, both in yield and quality. The late fall has given it time in which to fully mature in excellent condition.

Oats—An average yield and of good quality.

Wheat—Of good quality, but acreage small.

Rye—Very little raised.

Barley—Good crop.

Flax and Buckwheat—None raised.

Millet—Very little raised, but of good quality.

Sorghum—None raised.

Timothy—Yield a little below average, but of first-class quality.

Clover—Average yield and of good quality.

Prairie Hay—None raised.

Potatoes—Fair yield and of good quality.

Vegetables—Good.

Cattle—All are in good condition. There is a heavy demand for milkers, on account of demand for milk by the Iowa Condensed Milk Company.

Horses—More attention is being paid to the breeding of good drivers than for the past few years.

SWINE—All are in good condition, and no disease reported.

SHEEP—Are kept for both wool and mutton, and there is an increase in their numbers each year.

POULTRY—According to Congressman Dawson "The American Hen" is the best thing on the farm, and the farmers' wives here are beginning to think this is true.

BEES—Very few kept, and the yield of honey the past season was light.

OTHER INDUSTRIES—The Iowa Condensed Milk Company here had a very successful year, but the supply of milk does not meet their demand. They now receive between twenty and twenty-five thousand pounds per day, for which they pay a price that will average nearly one dollar and twenty cents per hundred pounds.

REPORT OF FAIR—Held at West Liberty, August 21-24, and was a success in every respect. The attendance on Wednesday, which was children's day, was very good, and on Thursday our record for attendance on any previous day in the history of society was broken. On Friday there was a good attendance, but a rain came up and the races were continued over until Saturday. The racing was good throughout. We had a special race for single drivers, offering ten premiums, and we received thirty entries—a show well worth going to see.

We use the single expert judge system in all departments, and find it very satisfactory.

MUSCATINE.

THOMAS BOOT, VICE-PRESIDENT, WILTON JUNCTION, OCTOBER 5, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Good.

CORN—Of good quality and will yield from thirty to seventy bushels per acre.

OATS—Of good quality and yielded about thirty bushels per acre.

WHEAT—Winter variety the best for several years, yielding from thirty to thirty-five bushels per acre. Small acreage of spring variety, but yielded a fair crop.

RYE—Yielded from twelve to fifteen bushels per acre.

BARLEY—Yielded an average of about twenty bushels per acre.

FLAX—None raised.

BUCKWHEAT—Small acreage, but yielded from ten to twelve bushels per acre.

MILLET—None raised.

SORGHUM—Good crop, producing about one hundred gallons per acre.

TIMOTHY—Fair crop, yielding from one to two tons per acre.

CLOVER—Where there was a stand the crop was good, yielding from one to one and one-half tons per acre.

PRAIRIE HAY—None raised.

OTHER GRAINS AND GRASSES—Spelt yielded about forty bushels per acre, and of good quality.

Potatoes—Early varieties of good quality and yield, while late varieties were of good size but only a few in a hill.

Vegetables—Good. Tomatoes fine, and pickles good.

Apples—Fair crop.

Other Fruits—Good. The largest crop of peaches in years.

Cattle—Are in fine condition, considering condition of pasturage.

Horses—Are in a healthy condition, and the usual number of colts.

Swine—Most of the early crop of pigs died, while the late ones are in a healthy condition.

Sheep—Usual number of lambs; wool good.

Poultry—Large amount raised.

Bees—Forepart of the season was very favorable for gathering of honey, while the latter part has been too dry.

Drainage—Some tiling done.

Other Industries—There are none, this being a strictly farming county.

Lands—The highest priced farm that was sold in this neighborhood this year was at the price of one hundred and thirty-five dollars per acre; improvements and building thereon were only fair.

Report of Fair—Held at Wilton Junction, September 18-21, and was a success in every particular, the weather being favorable, attendance good, and every department well filled with excellent exhibits, which was especially true of the horse, cattle and swine departments, in which extra accommodations had to be provided.

O'BRIEN.

RAY R. CRUM, SUTHERLAND, OCTOBER 23, 1906.

General Condition of Crops and Season—Never better.

Corn—Usual acreage planted, and will yield from forty-five to sixty-five bushels per acre.

Oats—Very good. Yielded from forty to fifty bushels per acre; some grain lost in shock when waiting for shock threshing.

Wheat—Small acreage, fair crop.

Rye—Very little raised.

Barley—Yielded from thirty to forty bushels per acre, of good quality and good price obtained.

Flax and Buckwheat—None raised.

Millet—Small acreage, and mostly raised for seed this year, of which the yield was fair.

Timothy—Good crop.

Clover—A very successful crop in this section of the county, and for seed this year is turning out quite well.

Potatoes—Very good yield; some cases of rotting in the ground reported.

Vegetables—Good.

Apples—A splendid crop. Northwest Iowa is getting to be quite an apple district, and some winter varieties do well.

OTHER FRUITS—Are raised to some considerable extent, and did well the past season.

CATTLE—Of good quality, but somewhat scarce in number. Prices good.

HORSES—Mature ones are scarce, while young ones are quite plentiful. All command very high prices.

SWINE—A great many raised, and good prices prevail.

SHEEP—Are being raised by farmers in small flocks, and have proven very profitable.

POULTRY—A profitable industry in this section.

BEES—Quite an increase in the number of hives. Market price of honey, ten cents per pound.

DRAINAGE—Most all farms, requiring, are being tiled, and the money invested in this way has been with good results.

LANDS—Not much being sold at the present time. Prices range from fifty to one hundred dollars per acre.

REPORT OF FAIR—Held at Sutherland, September 4-7.

O'BRIEN.

J. L. M'LAURY, SHELDON, SEPTEMBER 13, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Although the season was possibly a little too wet, and especially for the low lands, there was no bad winds or hail storms, and crops were generally good, and much above the average.

CORN—An unusually large acreage, and is well matured at this time and promises a "bumper" yield.

OATS—A heavy stand of straw promised a large crop, but yield, when threshed, did not come up to expectations.

WHEAT—Small acreage, but good crop.

RYE—Good crop, but acreage was small.

BARLEY—Quite a large acreage, but yielded only a fair crop.

FLAX—Very little sown, but yielded a fair crop.

BUCKWHEAT—Very little sown.

MILLET—The heavy rains caused production of hay to be very large; very little is grown, or cut, for seed.

SORGHUM—None grown.

TIMOTHY—Excellent.

CLOVER—Fine. Considerable grown for seed.

PRAIRIE HAY—Very small acreage of wild prairie hay in this county, but what there is yielded an excellent crop the past season.

OTHER GRAINS AND GRASSES—The season has been exceptionally favorable for hay and grasses of all kinds, and every one is well supplied with hay and there is considerable to sell.

POTATOES—Very good, but are commencing to rot badly in the field.

VEGETABLES—Good.

APPLES—Too many. The writer did not pick half of his, there being no sale for them locally. Some were shipped to North Dakota.

Other Fruits—The rain interfered with the strawberry crop at time of picking, so that best results were not obtained.

Cattle—Had the best of pasturage and are looking very fine. Some of the best pure-bred cattle are kept in this county, representing all the beef and dairy breeds.

Horses—Are in excellent condition; all farm horses are of draft breeds, and well bred.

Swine—A great many kept and raised, and have done well the past season.

Sheep—Have done well, although there is not many kept in this county.

Poultry—Did well, and probably increase in number raised, as there is a good market.

Bees—Not many kept.

Drainage—Natural conditions are very good, and very little artificial drainage is necessary.

Other Industries—There are seventeen banks in this county with a cash capital of $3,000,000, and with $25,000,000 deposits. Sheldon is the largest city in the county, with a population of 2,800, and has electric lights, water-works, and a flour-mill with a capacity of six hundred barrels per day, also a wholesale grocery house. Sheldon is also the home of one hundred commercial travelers.

Lands—Are about ten dollars per acre higher this year than last, and now range in price from seventy-five to ninety-five dollars per acre.

Report of Fair—Held at Sheldon, August 28-31. The weather was favorable and attendance was unusually good. Everything was pulled off as advertised, and every one was well pleased.

PAGE.

J. C. BICKNER, CLARINDA, OCTOBER 15, 1906.

General Condition of Crops and Season—Extra good and favorable.

Report of Fair—Held at Clarinda, September 3-7.

PAGE.

JAS. A. SWALLOW, SHENANDOAH, OCTOBER 24, 1906.

General Condition of Crops and Season—Early spring and midsummer was very dry; crops very good.

Corn—Medium crop.

Oats—Good.

Wheat—Excellent, fall variety yielding from thirty to fifty bushels per acre, while the spring variety yielded from twenty to twenty-eight bushels per acre.

Rye—Small acreage, medium crop.

BARLEY, FLAX AND BUCKWHEAT—None grown.

MILLET AND SORGHUM—Very little grown.

TIMOTHY—Poor crop.

CLOVER—Medium.

PRAIRIE HAY—Fair.

POTATOES—Good, both in yield and quality.

VEGETABLES—Yield and quality good.

APPLES—An abundant crop.

OTHER FRUITS—Thousands of bushels of peaches rotted on trees and ground.

CATTLE—Are doing well, very few being fed at present.

HORSES—Have done well.

SWINE—Cholera has played havoc with a great many herds, otherwise they have done well.

SHEEP—Very few kept.

POULTRY—Has done well.

BEES—Very few kept, and did not do well the past season.

DRAINAGE—Considerable tile is being laid, mostly in sloughs.

LANDS—Very little changing hands. Prices range from ninety to one hundred and twenty-five dollars per acre. Farmers are generally contented.

REPORT OF FAIR—Held at Shenandoah, August 13-17. Weather was very hot, exhibits good and attendance large.

PALO ALTO.

P. V. HAND, EMMETSBURG, OCTOBER 17, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Crops in general are the best we have had in ten years, or I might say in the history of the county. The early spring was rather wet, and on this account some lands were not cropped, but we had ideal weather for haying and harvesting and the past month just enough rain to keep late pasturage in good condition and at the same time not too much to interfere with fall plowing.

CORN—Will yield an average of forty-five bushels per acre and is of very good quality, well ripened before frost. Some fields will yield seventy-five bushels per acre, but these are exceptions.

OATS—Yielded an average of about thirty-five bushels per acre, machine measure, and overrun in weight about 10 per cent. The yellow variety was of better quality and yield than the white.

WHEAT—Is not raised extensively in this county, a ten-acre field being rare, and most of the farmers do not raise any at all. Fifteen bushels per acre is considered a good crop here, and is more than most of them get.

RYE—Small acreage, but yielded a very good crop.

BARLEY—Yielded about forty bushels per acre, and quality better than average, as the weather was very favorable at harvest time and most of the crop was stacked and threshed without being damaged by rain. Dealers say that the color is very good.

Flax—Large variation in yield, the writer knowing of a field of twenty-five acres yielding about fifteen bushels per acre, while another field of two hundred acres of new ground yielded only about six bushels per acre. Quality was good.

Buckwheat—None raised this year, to the writer's knowledge.

Millet—Is not raised extensively, but yielded a good crop.

Sorghum—Very little raised, the writer learning of only three farmers who planted it this season. Only one small mill in the county.

Timothy—Without doubt the best crop in many years, and most of it was put up in good shape. Plenty of rain in May and June caused a good growth.

Clover—Our farmers are just commencing to know the value of clover, and while the acreage is small as yet, it yielded a good crop besides the second growth making the best kind of fertilizer.

Prairie Hay—An immense crop, bottom lands from a distance having the appearance of one big hay stack. While the uplands also yielded a good crop; the acreage is not very large, as nearly all such land is under cultivation.

Other Grains and Grasses—Alfalfa has been tried to some extent and in some places successfully. However, as yet, it is only an experiment.

Potatoes—About an average crop, and are selling at from thirty to fifty cents per bushel. Two farmers in this vicinity have about eight acres each planted, which will yield an average of two hundred and fifty bushels per acre, and are of good quality.

Vegetables—Good.

Apples—Fair. Mostly early varieties raised, no winter varieties being raised for market.

Other Fruits—Grapes yielded a fair crop, but few of our farmers or gardeners raise them, and none are marketed.

Cattle—One of our principal industries, and is in a prosperous condition. The exhibit at our fair was the best in the history of the organization.

Horses—Are extensively raised, and breeders are getting rid of scrubs and using nothing but pedigreed stallions. Good horses are selling at from $125 to $200 per head. Two car loads shipped from here last week.

Swine—Judging from the display at our fair this year it would indicate that our farmers are taking much interest in this industry. Premiums were increased 50 per cent over last year, and the exhibits were excellent. A few farmers have lost some of the pigs, but not much complaint is heard.

Sheep—Are not plentiful here, although the last few years more of our farmers are raising them, but on a small scale, although there are two or three farmers who have large flocks, Mr. Alex Tod of Cylinder having about two thousand.

Poultry—This industry seems to be growing, although a great many complain of losing their poultry each year by disease. The display at the fair this year was very good.

Bees—This industry is gaining each year. Many of our best farmers have a few swarms, and a number of them have honey for the market, while there are three or four parties here in Emmetsburg that make it a business.

Drainage—This county during the past two years has done as much, if not more, drainage than any other county in the State, there being at present five county ditches under construction, besides every farmer is tiling.

Other Industries—The creamery business is one of the best things we have for our farmers, there being, I believe, fifteen creameries in the county, all of which are conducted under the co-operative plan. There are two tile and one brick and tile plants at Emmetsburg.

Lands—The average price of farm lands, without improvements, is about fifty dollars per acre, other lands ranging upward according to improvements. A half section farm about four miles from Emmetsburg, with fair improvemnts and tiled, sold last week for seventy dollars per acre cash.

Report of Fair—Held at Emmetsburg, September 18-21. The first day it rained and interfered somewhat with the program and attendance. However, favorable weather prevailed the next two days, on which the attendance was very good. No accidents or disturbances of any kind was had, and gambling of any kind on the grounds was strictly prohibited.

The display of fruit was the best we have ever had, and there was a good exhibit in the fine arts and fancy work departments. An addition was built to our display hall this year, and still we were crowded for room.

A much appreciated new feature and the source of one of the greatest advertisements for our fair was the ladies' waiting and resting room that was completd just prior to our fair. Mr. Parnham, the president of our society, worked hard to get this improvement, and all ladies attending the fair were greatly pleased with it.

The exhibit in the swine department was excellent, and after building an additional hog house containing forty pens, there was not sufficient room to accommodate all those who wished to exhibit.

Exhibits in the cattle and horse departments were about the same as last year. The poultry exhibit was larger than ever before, and it was necessary for us to put up tents in which to house it, as our poultry house was altogether too small.

Taken as a whole the fair was a success, and while we will not have a surplus after paying expenses and premiums, it is the opinion that with the State appropriation we will have sufficient funds to pay everything, including about $400 for improvements.

POCAHONTAS.

R. M. HARRISON, FONDA, OCTOBER 20, 1906.

General Condition of Crops and Season—Good.

Corn—Excellent both in quality and yield; 25 per cent above the average.

Oats—Good in both quality and yield.

Wheat—Small acreage, fair crop.

Rye—Small acreage, good crop.

Barley—Good.

Flax—Small acreage, but yielded a good crop.

Buckwheat—None raised.

Millet—Good.

Sorghum—None raised.

Timothy—Good.

Clover—Good.

Prairie Hay—Good.

Other Grains and Grasses—Good.

Potatoes—Fair yield and of good quality.

Vegetables—Good.

Apples—Fair.

Other Fruits—Good.

Cattle—Have done well. County is well stocked and the average of pure breds and grades is constantly increasing.

Horses—Only pure bred sires used, and stock shows constant improvement. Eastern demand keeps stocks down to minimum in numbers.

Swine—Large number raised and are of good breeding. Considerable loss in some localities by disease is reported.

Sheep—Very few raised. Some small flocks of pure breds. and have done well.

Poultry—A great deal raised, and did well the past season.

Bees—Not many kept.

Drainage—Many large drainage canals are being dug, also miles of smaller ditches, and a vast quantity of tile being laid.

Other Industries—Are the manufacturing of brick and drain tile, creamery products, and many small plants for concrete building blocks.

Lands—Very little changing hands; prices range from sixty-two dollars and fifty cents to ninety dollars per acre.

Report of Fair—Held at Fonda, August 7-10. While it rained for three days preceding and the three days of the fair the attendance was fair, and the pre-arranged program was carried through without omission.

Exhibits in all departments were up to the average, but would have been better had the weather and roads permitted exhibitors from more distant parts of our territory to bring in their exhibits.

POTTAWATTAMIE.

ROSCOE BARTON, AVOCA, OCTOBER 27, 1906.

General Condition of Crops and Season—Owing to the abundant rainfall in this territory this season there is not a shortage in any of the crops grown generally on the farms, and as the prosperity of the county depends to a large extent upon the crops grown by the farmer the merchants of the towns are enjoying good business.

Corn—Will yield on an average of about fifty bushels per acre.

Oats—Yielded from twenty to sixty bushels per acre.

Wheat—A large number of farmers here are raising winter wheat, and the past season yielded from fifteen to twenty bushels per acre, being more than that of spring wheat.

Potatoes—A good yield, and they are now being marketed at a fair price.

Cattle—There is a good demand for all kinds of cattle, and more especially for feeders, owing to the large crop of corn. Nearly every large farmer has a herd of graded cattle and a greater interest is being taken in the fancy strains.

Horses—On all kinds prices are higher than they have been for years, and there hardly seems to be enough horses to meet the demand. Good drafters bring from one hundred and fifty to two hundred dollars per head, which is much encouragement for farmers to raise horses of this type.

Swine—This industry is assuming immense proportions in this territory and sales of the fancy strains are being billed from every town. Over five hundred head were on exhibit at our fair.

Sheep—A large number of feeders are brought into this county from Omaha and fed for market, one farmer having over two thousand head at this time.

Report of Fair—Held at Avoca, September 11-14, and was a record breaker, both as to attendance and number of exhibits. Rain on the first and last days prevented the crowd from coming, and on the last day the races were declared off on account of the rain. However, on the other days the crowds were the largest ever seen on the grounds.

The races were good. The "Guideless Wonder," Surena, gave two exhibitions on the track, and the crowd was wild with enthusiasm when it was announced that the horse had broken the world's record, trotting the mile in 2:15¼ without driver or rider.

The fair was a success financially, and the management contemplates building both the floral hall and amphitheater larger.

The stock raisers of the county have formed a sales pavilion company, and have already let the contract for the pavilion and barn, which will be built upon the fair grounds and will be used by them during the annual fairs.

POWESHIEK.

I. S. BAILEY, JR., GRINNELL, SEPTEMBER, 14, 1906.

General Condition of Crops and Season—Farm work was delayed somewhat by lateness of season, but weather was very favorable through corn planting and plowing time. Owing to it being very dry in June the hay crop was not exceptionally large, but was of excellent quality.

Corn—Good, and will be fully matured and out of way of frost by latter part of September.

Oats—Fair yield and of good quality.

WHEAT—Small acreage, but yield and quality good.

RYE—Small acreage, but yielded a fair crop.

BARLEY—Good, both in quality and yield.

FLAX—None raised.

BUCKWHEAT—None raised.

MILLET—Good.

SORGHUM—Good.

TIMOTHY—Light yield, but of excellent quality.

CLOVER—Light yield, but of first class quality.

PRAIRIE HAY—None raised.

POTATOES—Only fair, being damaged by dry weather of June and July.

VEGETABLES—Fair.

APPLES—Fair yield, but of poor quality; very wormy.

OTHER FRUITS—Good, especially grapes, also more preaches raised than ever before.

CATTLE—In good condition where pastures were not fed too close.

HORSES—Good.

SWINE—A large number of pigs were lost during March and April owing to cold, wet weather. Some little cholera is prevalent at this time.

SHEEP—Good.

POULTRY—Good.

BEES—Good.

DRAINAGE—A large amount of tile is being laid, thus making it possible to raise crops on low lying land where heretofore nothing would grow in a wet season.

OTHER INDUSTRIES—Are in a very healthy condition. Manufacturing is increasing, and the demand is fully equal to the supply. Labor of all kinds is receiving good wages.

LANDS—Have advanced in price from $10 to $25 per acre during the last year.

REPORT OF FAIR—Held at Grinnell, September 3-5, and the attendance was the largest in the history of the society. The exhibits in the cattle, horse and swine departments were good, but in the sheep department there was a falling off from the number shown at our fair of 1905.

The weather conditions were most favorable.

POWESHIEK.

JAMES NOWAK, MALCOM, OCTOBER 25, 1906.

GENERAL CONDITION OF CROPS AND SEASON—The season was favorable for all crops except hay, for which it was too dry. The pastures were damaged somewhat by the drouth, and potatoes and other garden truck suffered to some extent thereby.

CORN—A good stand was secured and but little replanting had to be done. It suffered slightly from dry weather in July and August, but has all matured well and will yield an average of about thirty-nine bushels per acre.

OATS—Good, both in yield and quality.

WHEAT—Small acreage, but yield and quality good.

BARLEY—Good, both in quality and yield. Larger acreage than usual.

FLAX—None raised.

BUCKWHEAT—Small acreage, but yield and quality good.

MILLET—Small acreage, but fair yield and of good quality.

SORGHUM—Fair yield and of excellent quality.

TIMOTHY—Yielded only about two-thirds of the usual crop of hay owing to dry weather. However, quality and demand is good, and price high.

CLOVER—Short crop, but quality good and price high.

PRAIRIE HAY—None cut.

OTHER GRAINS AND GRASSES—Pastures have been very poor since the first of September. Small streams and wells are going dry, and there is a scarcity of water for stock.

POTATOES—Early varieties yielded a fair crop of good quality, while the later varieties did not do so well. Market price is fifty cents per bushel.

VEGETABLES—Garden truck was abundant early in the season, but later suffered from drouth, especially cucumbers and cabbage.

APPLES—A good yield, but wormy.

OTHER FRUITS—Peaches, pears, plums, cherries, grapes and blackberries were abundant.

CATTLE—Have done well, but had to be fed earlier than usual, owing to shortage of pasturage caused by dry weather. No disease reported.

HORSES—Prices are increasing each year. Demand is large and good salable horses are quickly bought for the eastern markets.

SWINE—Have done well, are plentiful, demand good and prices high? Very little disease reported.

SHEEP—Not many raised in this vicinity. Some brought in for feeding, and are doing well and bring good prices.

POULTRY—Turkeys scarce and prices high. Ducks in fair demand. Chickens doing well and high in price. Good prices obtained for eggs all season.

BEES—Have done fairly well.

DRAINAGE—A great deal of tile being put in. Roads have been good nearly all summer. The new road law is a success, and a great improvement over the old method of working the highways.

OTHER INDUSTRIES—Many are engaged in the sale of Canadian land.

LANDS—Very little changing hands. Prices range from $80 to $115 per acre.

REPORT OF FAIR—Held at Malcom, August 21-23. The weather was exceedingly hot, dry and dusty, owing to which the attendance was cut down to some extent. The exhibits in all departments were good, as was also the racing and special attractions.

A week after the close of the fair our sheep and swine sheds, and a part of the cattle sheds, were burned, and were but partially insured.

RINGGOLD.

F. E. SHELDON. MOUNT AYR, SEPTEMBER 27, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Good. Season a little dry.

CORN—Good. Above average. Best crop for ten years.

OATS—Fair. Below average.

RYE—Fair.

BARLEY—None raised.

FLAX—None raised.

BUCKWHEAT—None raised.

MILLET—Small crop.

TIMOTHY—Good quality, but light yield on account of drouth.

PRAIRIE HAY—None raised.

POTATOES—Fair. Too dry for late varieties.

VEGETABLES—Good.

APPLES—Largest crop for years.

OTHER FRUITS—Good.

CATTLE—Have done well. About the usual number. Prices good.

HORSES—All classes have done well.

SWINE—Has done well.

SHEEP—Have done well. Noticeable improvement in quality.

POULTRY—All kinds did well.

REPORT OF FAIR—Held at Mount Ayr, September 6-8. Exhibits in all live stock departments were good, while there was a fair display of fruits and vegetables. Financially and otherwise, the fair was a success.

SAC.

S. M. LEWIS, SAC CITY, SEPTEMBER 29, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Average of crops was good. Season favorable, except in July and August when it was somewhat dry.

CORN—Good. Larger acreage than ever before. Will yield better than the average.

OATS—Yield and quality good.

WHEAT—Some maccaroni wheat yielded as high as thirty bushels per acre. This was an experiment and gave good satisfaction.

RYE—Small acreage, but yielded a good crop.

BARLEY—Larger acreage than usual, and yielded a good crop.

FLAX—Not much raised.

BUCKWHEAT—Small acreage, but yielded a good crop.

MILLET—Heavy crop, yielding from three and one-half to four tons per acre.

SORGHUM—Small acreage, which yielded a light crop of good quality.

TIMOTHY—Light yield.

CLOVER—Light yield of first cutting, while the second cutting produced a good yield of seed.

PRAIRIE HAY—Good crop.

POTATOES—Light yield, but of good quality.

VEGETABLES—Good.

Apples—Good yield, but of inferior quality.

Other Fruits—Cherries, plums and all small fruits yielded a good crop.

Cattle—Did not thrive as well as usual, but have done well the last thirty days.

Horses—Marketable ones are scarce and command high prices.

Swine—Thrifty. No disease of any kind reported.

Sheep—Have done well. An increased interest is being taken in this industry.

Poultry—A very profitable industry in this county.

Bees—Industry engaged in to some extent. Honey production good.

Drainage—Much interest is taken in this question, and there is now over $100,000 worth of drainage ditches provided for.

Other Industries—The canning factory in this city put up about 1,500,000 cans of corn the past season. The manufacturing of cement tile, stone and fence posts is engaged in quite extensively, one factory employing over ten men the year around.

Lands—Range in price from $57 to $100 per acre. Average, $80.

Report of Fair—Held at Sac City, August 14-16. The weather was extremely hot, and this, coupled with the fact that a Chautauqua was held on the fair grounds for ten days during July, caused the attendance to be very light. The races were the best ever had, and all premiums were paid in full.

SHELBY.

C. F. SWIFT, HARLAN, OCTOBER 2, 1906.

General Condition of Crops and Season—Never better. Small grain was good, being better than for the average year, and all was harvested in good season and yielded well. The season was an ideal one, although the rainfall was less than for several years, but caused no damage, as subsoil is such that holds the moisture. No destructive storms occurred, or any damage done to the crops from any source.

Corn—Excellent. Far above the general average of the past ten years, both in quality and yield. Large acreage and better stand than usual.

Oats—Average yield and of good quality.

Wheat—Of good quality and yielded a little above the average crop.

Rye—Very little sown, and is usually used for hog pasture.

Barley—Good. Above the average yield.

Flax—None sown.

Buckwheat—Small acreage, but yielded a good crop.

Millet—Good, but only a small acreage sown.

Sorghum—Small acreage, but yielded a good crop.

Timothy—Good. Yield was reduced somewhat on account of dry weather in June. Yielded a good crop of seed, which is selling at $1.50 and upwards per bushel.

Clover—An average crop. A poor stand of spring seeding, attributed to insects and drouth.

Prairie Hay—Only small acreage in county, but yielded a good crop.

Other Grains and Grasses—Alfalfa, brome-grass, spelts, etc., are being tried in an experimental way, but to what success we are not advised.

Potatoes—The usual acreage planted, and while the yield was not very heavy the quality was good.

Vegetables—An abundance of all varieties.

Apples—Good; probably better than the average of the past ten years.

Other Fruits—Equally as good, and some better, than the average crop.

Cattle—An industry in which, we believe, this county enjoys the distinction of being foremost in the State; also, of having reared, fed and exhibited the highest priced car lot of beef cattle ever sold in the American markets, viz.: those of Chas. Escher, Sr., which sold in Pittsburg at $21.25 per cwt.

Horses—All the standard classes are represented, and the high prices obtained in recent years has caused an increase in number of foals.

Swine—Generally healthy. An average crop of pigs, the mortality of which was increased to some extent by wet weather in the spring. Very little, if any, disease prevalent at this time.

Sheep—Very few in county.

Poultry—This industry still ranks at 100, and yields a greater profit on the amount invested than any other product of the farm.

Bees—A growing industry. One farmer with only sixty acres of land markets between $400 and $500 worth of honey each year.

Drainage—Natural condition is very good, although there is some little tile being laid to drain sloughs.

Other Industries—There are none, other than agricultural, that is engaged in to any extent.

Lands—It is estimated that at least one-half is devoted to meadows and pastures. Some timber land is still left, although it is being divested very rapidly. Prices have doubled during the last decade, and now range from $50 to $200 per acre, owing to location and improvements.

Report of Fair—Held at Harlan, August 20-23. The exhibit of horses, cattle and hogs was the best we have had for the past seventeen years. Over four hundred head of hogs were shown, some of which were exhibited at the State Fair and won in the competition there. Some of the cattle on exhibit had also been exhibited at the State Fair and won premiums.

No gambling or games of chance of any description were permitted on our grounds. The fair, as usual, was pronounced a success from every point of view.

SIOUX.

H. SLIKKERVEER, ORANGE CITY, OCTOBER 23, 1906.

General Condition of Crops and Season—Although the season was rather wet, crops generally were very good.

Corn—Will yield from forty to sixty bushels per acre.

Oats—An average crop, yielding from forty-five to sixty-five bushels, APPLES—Good yield, but of inferior quality.

OTHER FRUITS—Cherries, plums and all small fruits yielded a good crop.

CATTLE—Did not thrive as well as usual, but have done well the last thirty days.

HORSES—Marketable ones are scarce and command high prices.

SWINE—Thrifty. No disease of any kind reported.

SHEEP—Have done well. An increased interest is being taken in this industry.

POULTRY—A very profitable industry in this county.

BEES—Industry engaged in to some extent. Honey production good.

DRAINAGE—Much interest is taken in this question, and there is now over $100,000 worth of drainage ditches provided for.

OTHER INDUSTRIES—The canning factory in this city put up about 1,500,000 cans of corn the past season. The manufacturing of cement tile, stone and fence posts is engaged in quite extensively, one factory employing over ten men the year around.

LANDS—Range in price from $57 to $100 per acre. Average, $80.

REPORT OF FAIR—Held at Sac City, August 14-16. The weather was extremely hot, and this, coupled with the fact that a Chautauqua was held on the fair grounds for ten days during July, caused the attendance to be very light. The races were the best ever had, and all premiums were paid in full.

SHELBY.

C. F. SWIFT, HARLAN, OCTOBER 2, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Never better. Small grain was good, being better than for the average year, and all was harvested in good season and yielded well. The season was an ideal one, although the rainfall was less than for several years, but caused no damage, as subsoil is such that holds the moisture. No destructive storms occurred, or any damage done to the crops from any source.

CORN—Excellent. Far above the general average of the past ten years, both in quality and yield. Large acreage and better stand than usual.

OATS—Average yield and of good quality.

WHEAT—Of good quality and yielded a little above the average crop.

RYE—Very little sown, and is usually used for hog pasture.

BARLEY—Good. Above the average yield.

FLAX—None sown.

BUCKWHEAT—Small acreage, but yielded a good crop.

MILLET—Good, but only a small acreage sown.

SORGHUM—Small acreage, but yielded a good crop.

TIMOTHY—Good. Yield was reduced somewhat on account of dry weather in June. Yielded a good crop of seed, which is selling at $1.50 and upwards per bushel.

CLOVER—An average crop. A poor stand of spring seeding, attributed to insects and drouth.

Prairie Hay—Only small acreage in county, but yielded a good crop.

Other Grains and Grasses—Alfalfa, brome-grass, spelts, etc., are being tried in an experimental way, but to what success we are not advised.

Potatoes—The usual acreage planted, and while the yield was not very heavy the quality was good.

Vegetables—An abundance of all varieties.

Apples—Good; probably better than the average of the past ten years.

Other Fruits—Equally as good, and some better, than the average crop.

Cattle—An industry in which, we believe, this county enjoys the distinction of being foremost in the State; also, of having reared, fed and exhibited the highest priced car lot of beef cattle ever sold in the American markets, viz.: those of Chas. Escher, Sr., which sold in Pittsburg at $21.25 per cwt.

Horses—All the standard classes are represented, and the high prices obtained in recent years has caused an increase in number of foals.

Swine—Generally healthy. An average crop of pigs, the mortality of which was increased to some extent by wet weather in the spring. Very little, if any, disease prevalent at this time.

Sheep—Very few in county.

Poultry—This industry still ranks at 100, and yields a greater profit on the amount invested than any other product of the farm.

Bees—A growing industry. One farmer with only sixty acres of land markets between $400 and $500 worth of honey each year.

Drainage—Natural condition is very good, although there is some little tile being laid to drain sloughs.

Other Industries—There are none, other than agricultural, that is engaged in to any extent.

Lands—It is estimated that at least one-half is devoted to meadows and pastures. Some timber land is still left, although it is being divested very rapidly. Prices have doubled during the last decade, and now range from $50 to $200 per acre, owing to location and improvements.

Report of Fair—Held at Harlan, August 20-23. The exhibit of horses, cattle and hogs was the best we have had for the past seventeen years. Over four hundred head of hogs were shown, some of which were exhibited at the State Fair and won in the competition there. Some of the cattle on exhibit had also been exhibited at the State Fair and won premiums.

No gambling or games of chance of any description were permitted on our grounds. The fair, as usual, was pronounced a success from every point of view.

SIOUX.

H. SLIKKERVEER, ORANGE CITY, OCTOBER 23, 1906.

General Condition of Crops and Season—Although the season was rather wet, crops generally were very good.

Corn—Will yield from forty to sixty bushels per acre.

Oats—An average crop, yielding from forty-five to sixty-five bushels, by weight, per acre.

WHEAT—An average crop.

RYE—None raised.

BARLEY—Good.

FLAX—None raised.

BUCKWHEAT—None raised.

MILLET—Very good.

SORGHUM—Small acreage, but yielded a good crop.

TIMOTHY—Above the average crop.

CLOVER—Very good.

PRAIRIE HAY—Above the average crop.

OTHER GRAINS AND GRASSES—Good.

POTATOES—Yielded a good crop.

VEGETABLES—Good.

APPLES—An abundant crop of summer and fall varieties, while of the winter varieties there is but few.

OTHER FRUITS—Very good.

CATTLE—In good condition.

HORSES—Have done well.

SWINE—A great deal of cholera is prevalent in some localities.

SHEEP—Have done well and are in good condition.

POULTRY—A great deal dying from diseases which are prevalent.

BEES—Did very well the past season.

LANDS—Range in price from $85 to $100 per acre. Good demand.

REPORT OF FAIR—Held at Orange City, October 3-5, after having been postponed from the dates originally set (September 19-21) owing to rainy weather prevailing on same.

Although a postponed fair, the exhibits in every department were numerous and of excellent quality, and the attendance was very good, with the exception of the second day, when it rained. The racing and attractions were good, and all those attending expressed themselves as being well pleased with the fair.

SIOUX.

DENNIS SCANLAN, ROCK VALLEY, SEPTEMBER 12, 1906

GENERAL CONDITION OF CROPS AND SEASON—Favorable, and good.

CORN—A large acreage, and promises a good yield. Seventy-five per cent is out of danger of damage by frosts at this date, and indications are that it will all fully mature without being damaged thereby. Will make an average of about fifty bushels per acre.

OATS—Of good quality and yielded about fifty bushels per acre.

WHEAT—Small acreage. Winter variety yielded from forty to fifty bushels per acre, while the spring variety yielded about fifteen bushels per acre.

RYE—None raised.

BARLEY—Only small acreage sown, which yielded about twenty-five bushels per acre, of fair quality.

FLAX—None raised.

BUCKWHEAT—None sown.

MILLET—Very little raised.

SORGHUM—None raised.

TIMOTHY—Yielded about two and one-half tons per acre, and was of good quality.

CLOVER—Of good quality, and yielded about two and one-half tons per acre.

PRAIRIE HAY—None raised.

POTATOES—Good, both in yield and quality.

VEGETABLES—Large and excellent crop.

APPLES—Plentiful.

OTHER FRUITS—Did well.

CATTLE—Raising and feeding of cattle is one of the principal industries of this county, and have done well the past season.

HORSES—Demand and prices good. Good ones are scarce.

SWINE—Have done well. Very little disease reported. A large number on hand, and prices are high.

SHEEP—Prices are high. Quite a number are engaging in this industry. Increase in the number raised.

POULTRY—Considerable attention is paid this industry, which is a very profitable one. Prices for both poultry and eggs the past season have been good.

BEES—There is a noticeable increase in the interest being taken in this industry.

DRAINAGE—Natural conditions are ideal, the land being slightly rolling and the soil best adapted therefor.

OTHER INDUSTRIES—Are dairy farms and gardening, which have been profitable the past season.

LANDS—Increasing in value, and demand good. Prices range from $60 to $100 per acre, and meet with ready sale.

REPORT OF FAIR—Held at Rock Valley, September 4-6. The weather was exceptionally favorable, exhibits in every department numerous and first class in quality, and the attendance was fair.

STORY.

F. H. GREENWALT, NEVADA, OCTOBER 4, 1906.

GENERAL CONDITION OF CROPS AND SEASON—The season was unusually favorable, and all crops were exceptionally large and of good quality.

CORN—Acreage estimated at 130,000. Will yield about forty-five bushels per acre, and is of excellent quality, being tne best since 1899.

OATS—Acreage 55,000. Yielded about thirty-five bushels per acre.

WHEAT—Yielded from twenty to forty bushels per acre. Small acreage.

RYE—Not much grown. Yielded from eighteen to twenty bushels per acre.

BARLEY—Small acreage; yielded about forty bushels per acre.

FLAX—None grown.

BUCKWHEAT—Very little raised.

MILLET—Sown only in small patches, where too wet for corn.

Sorghum—Fair.

Timothy—Acreage estimated at 11,000. Yielded about one and one-half tons per acre, and was put up in good condition.

Clover—Yielded about one and one-half tons per acre, and was of good quality.

Prairie Hay—Yielded about one ton per acre.

Other Grains and Grasses—None to speak of.

Potatoes—Yielded from one hundred and seventy-five to two hundred and twenty-five bushels per acre, and of good quality.

Vegetables—Exceptionally good.

Other Fruits—Yield and quality better than usual.

Cattle—Not many feeders in county. A number of breeders of fancy stock.

Horses—The general tendency is to raise good horses, farmers raising heavy draft breeds. Prices good.

Swine—A noticeable improvement in breeds. Farmers are giving more attention to this industry each year.

Sheep—Not many raised, but have proven profitable.

Poultry—A great deal of attention being paid to this industry, many farmers going into it as a business each year.

Bees—Did not do very well.

Drainage—Is receiving more attention each year. Several large ditches put in the past season.

Lands—Some transfers are being made, and prices range from $75 to $100 per acre.

Report of Fair—Held at Nevada, September 11-14. The attendance was good, despite unfavorable weather conditions, and the exhibit of live stock was the largest ever held by our society.

TAMA.

A. G. SMITH, TOLEDO, OCTOBER 15, 1906.

General Condition of Crops and Season—The best for a number of years.

Corn—Never better. As fine a crop as could be desired.

Oats—Fair.

Wheat—Very good.

Rye—Good.

Barley—Good.

Flax—Not much, if any, grown.

Buckwheat—Good.

Millet—Good.

Sorghum—Excellent quality.

Timothy—Very good.

Clover—Fair.

Prairie Hay—Very little left in county.

Other Grains and Grasses—Good.

Potatoes—Fair.

Vegetables—Very good.

Apples—The best for years.

Other Fruits—Very good.

Cattle—Better stock is being raised each year. Several of our farmers are improving their herds.

Horses—More raised than for several years, and prices were never better. A noticeable improvement in their breeding.

Swine—Quality of breeding is unsurpassed. Over 400 head were on exhibit at our fair.

Sheep—Very few in this county. Sixty-four head entered for premiums at our fair.

Poultry—Has done well; all breeds represented.

Bees—An industry which is not engaged in extensively here.

Drainage—Most all low, wet ground in this county has been drained.

Other Industries—A paper-mill at Tama, and flour-mill at Toledo.

Lands—Mostly of good black loam. Prices range from $50 to $150 per acre.

Report of Fair—Held at Toledo, Septembr 25-28, and was the banner fair in the history of our society, owing to the favorable weather and financial condition of our pople. The cattle exhibit was especially good, and the parade of live stock on Friday was the feature of the fair. About one hundred head each of cattle and horses were in the parade, and for a part of the way a hog which weighed over one thousand pounds. The races were good, and the fair was declared a success in every particular.

In the matter of improvements fifty feet was added to our amphitheatre, and all buildings were painted.

TAYLOR.

J. J. LAWS. BEDFORD, SEPTEMBER 24, 1906.

General Condition of Crops and Season—Good.

Corn—Best crop for years; not damaged by frosts. Will make an average yield of about forty bushels per acre.

Oats—Were short in straw, but yielded well, and were of good quality, weighing nearly forty pounds to the measured bushel.

Wheat—Small acreage, but yielded well, some going as high as forty bushels per acre. Quality was excellent.

Rye—Not much sown, but yield and quality good.

Barley—None raised.

Flax—None raised.

Buckwheat—Very little raised.

Millet—Not extensively grown, but yielded a good crop the past season.

Sorghum—Quite a large acreage sown for forage.

Timothy—Is extensively grown in this county, both as a forage crop and for seed. There was very little cut for seed the past season, owing to redtop getting into it.

Clover—Is extensively raised for forage and seed, and to keep the fertility of the soil.

Prairie Hay—Very little in this county.

OTHER GRAINS AND GRASSES—Some have been experimenting with alfalfa, but have not found it a success.

POTATOES—Early varieties yielded a heavy crop of good quality, while the late varieties did not do so well. Acreage small.

VEGETABLES—Good, both in quality and yield.

APPLES—An abundant crop, and of good quality.

OTHER FRUITS—Strawberries, gooseberries, currants, blackberries, raspberries and all kinds of small berries were plentiful and of excellent quality. The peach crop was also large.

CATTLE—Are extensively raised, being one of the principal industries of this county. Nearly all of the beef breeds are represented, and are of standard quality. Short-Horns predominate. No disease reported.

HORSES—A prominent industry in this county. All of the draft breeds are raised, and there are some excellent individuals. Roadsters are quite plentiful, as are also Shetland ponies.

SWINE—Raised extensively and did well the past season; no disease reported.

SHEEP—Not extensively raised, but are of good quality.

POULTRY—Chickens are plentiful, and all breeds are represented. The number of eggs and chickens marketed from this county is enormous. A large number of turkeys are also raised for the market.

BEES—This industry is engaged in quite extensively, and the honey production is large and of good quality.

DRAINAGE—Land is undulating and natural drainage is good. Marshy spots are being drained successfully.

OTHER INDUSTRIES—The creamery at Bedford produces from one and one-half to two tons of butter per day, for which the top market price is obtained. The milling industry is carried on in a small scale, there being three flour and several feed mills in the county.

LANDS—Range in price from $40 to $200 per acre, according to quality and location.

REPORT OF FAIR—Held at Bedford, September 18-21.

UNION.

CARL DAVENPORT, CRESTON, SEPTEMBER 24, 1906.

GENERAL CONDITION OF CROPS AND SEASON—An unusually productive year. All crops showed a marked increase in comparison with last three seasons. The season was somewhat dry up to September, since which time the rainfall has been plentiful.

CORN—Immense crop, both in quality and yield.

OATS—The usual yield.

WHEAT—Very little sown.

RYE—None grown.

BARLEY—Average crop.

FLAX—None grown.

BUCKWHEAT—Very little raised.

MILLET—None raised.

Sorghum—None raised.

Timothy—Hay crop was somewhat light, but of excellent quality.

Clover—Good crop.

Prairie Hay—Light crop.

Other Grains and Grasses—Some alfalfa is being raised successfully.

Potatoes—Large yield and of excellent quality, being the best crop for years.

Vegetables—Unusually plentiful.

Apples—Large increase in crop.

Other Fruits—Increase in production. Cherries and grapes in abundance.

Cattle—A growing industry.

Horses—The breeding and importation of horses has become one of the principal occupations of the farmers of this section. There has been a marked improvement in the quality of the horses actually raised here and many fine animals have been imported.

Swine—The most profitable industry of our farmers, and it has shown no decrease the past season.

Sheep—A greater number were raised this season than at any time during the past ten years.

Poultry—A growing industry.

Bees—A much neglected industry in this county, there being very few bees kept.

Lands—Steadily increase in price, and decrease in number of transfers made each year.

Report of Fair—Held at Creston, September 4-7. The weather was exceptionally favorable, and the attendance was immense. It was our first successful fair in four years.

VAN BUREN.

D. A. MILLER, MILTON, OCTOBER 1, 1906.

General Condition of Crops and Season—Although a little too dry at times, the season as a whole was an exceptionally favorable one.

Corn—Best crop for years.

Oats—Good.

Wheat—Good.

Rye—Good.

Barley—Small acreage, but yielded a good crop.

Flax—Small acreage, but yielded well.

Buckwheat—Fair.

Millet—Good.

Sorghum—Good.

Timothy—Yielded about a half crop.

Clover—Very little raised.

Prairie Hay—Fair.

Other Grains and Grasses—Fair; a little too dry.

Potatoes—Not many in a hill, but large in size.

VEGETABLES—Plentiful.

APPLES—Plentiful.

OTHER FRUITS—Were abundant.

CATTLE—A great many raised, and have done well the past season.

HORSES—Have done well, and prices are high.

SWINE—A large number raised.

SHEEP—Have done well.

POULTRY—Industry is growing.

BEES—A plentiful supply of honey.

DRAINAGE—Good.

OTHER INDUSTRIES—Flourishing.

LANDS—Very fertile. Advancing in price.

REPORT OF FAIR—Held at Milton, September 4-7.

WARREN.

LEE TALBOTT, INDIANOLA, OCTOBER 8, 1906.

GENERAL CONDITION OF CROPS AND SEASON—The season has been exceptionally favorable, and nearly all crops were above the average in yield and of excellent quality. Warren is one of the "Three River" counties, and is one of the best agricultural and stock raising counties in the State.

CORN—An excellent crop. Will yield from fifty to eighty bushels per acre, and is of highest grade.

OATS—An average yield, and of good quality.

WHEAT—About an equal amount of spring and winter varieties raised, and quality was excellent. Acreage in this county has been much reduced from former years.

RYE—Small acreage, but yielded a good crop.

BARLEY—Very little raised.

FLAX—None raised.

BUCKWHEAT—None raised.

MILLET—None raised.

SORGHUM—Very little raised.

TIMOTHY—A good crop, both for pasture and hay. The meadows yielded a good average crop of excellent quality hay.

CLOVER—Exceptionally good, many meadows yielding two crops of fine quality hay.

PRAIRIE HAY—Almost a thing of the past in this county, all uncultivated land having long since gone to bluegrass and white clover.

OTHER GRAINS AND GRASSES—Good.

POTATOES—Light crop of early varieties, while the late ones made a good yield and were of excellent quality.

VEGETABLES—An immense crop of all varieties.

APPLES—The largest crop ever raised in this county, and winter varieties were especially fine in quality.

OTHER FRUITS—Excellent crop of peaches and pears, as well as all berries and small fruits.

CATTLE—All of the different breeds of beef cattle are raised, fed and marketed by our farmers, and but few counties produce better.

HORSES—The very best breeds are raised, and in large numbers.

SWINE—An important industry in this county, and large numbers of all the leading breeds are raised annually. No disease reported.

SHEEP—Very few in this county, although farmers who keep them have found them profitable.

POULTRY—Raised extensively, and high prices have been obtained for both poultry and eggs the past year.

BEES—This industry is not engaged in extensively, although they have proven profitable by those who keep them.

DRAINAGE—A great deal done during the past year, and nearly all marshy places are now drained with tile.

OTHER INDUSTRIES—The making of cigars and brooms is engaged in to some extent. Simpson College, one of the leading educational institutions of the State, is located at Indianola, the county seat.

LANDS—Range in price from $50 to $125 per acre.

REPORT OF FAIR—Held at Indianola, September 18-21. Weather conditions were not favorable the first two days, but was good the last day of our exhibition. The attendance was not up to the average of former years, on account of roads being in bad condition. The exhibits in every department were numerous, and of the best quality. Premiums paid aggregated $1,028.

WINNEBAGO.

J. A. PETERS, FOREST CITY, OCTOBER 18, 1906.

GENERAL CONDITION OF CROPS AND SEASON—The season has been very favorable and crops have been above the average of the past five years. The first killing frost visited this section October 6. The ground is in excellent condition for fall plowing.

CORN—Exceptionally good. Average yield will probably be about forty-five bushels per acre.

OATS—Average crop, although colored considerably by heavy rains at harvest time.

WHEAT—Very little raised. Some macaroni wheat raised, and yielded about twenty-five bushels per acre the past season.

RYE—Very little raised.

BARLEY—Yielded about thirty bushels per acre, and of good quality.

FLAX—Small acreage, but yielded about twelve bushels per acre.

BUCKWHEAT—Only a few small patches.

MILLET—Small acreage, but yielded a heavy crop.

SORGHUM—None raised.

TIMOTHY—Yielded in hay about three tons per acre, and of seed about four bushels per acre.

CLOVER—Good crop of hay; none raised for seed. Soil in this county is exceptionally well adapted to the raising of clover.

PRAIRIE HAY—Yielded about two tons per acre.

POTATOES—An average crop; yielded about one hundred and fifty bushels per acre.

VEGETABLES—All varieties made a very rank growth.

APPLES—Not a large crop. The Wealthy is the leading fall variety, which did not bear as heavily as last year. Quite a few winter apples are now being raised.

OTHER FRUITS—An abundant crop of all small fruits.

CATTLE—Are in good condition; season favorable.

HORSES—Good ones scarce, they having been nearly all bought up and shipped out. There is a noticeable improvement in the quality of horses being raised, several fine stallions having been purchased in this vicinity.

SWINE—The pig crop was somewhat lighter than usual. No disease reported.

SHEEP—More than for several years past, and some very fine individuals were shown at our fair.

POULTRY—Much interest is taken in this industry, and breeds are being graded up until there is now some very fine flocks.

BEES—Only a few kept, and honey crop was rather light this season.

DRAINAGE—There is an increased interest being taken in this question and a great number of county ditches are under construction. Much tiling is being done.

LANDS—Although there is no better land in the State than here, prices are much lower than in any other county. Good farms can be bought at from $50 to $60 per acre.

REPORT OF FAIR—Held at Forest City, October 2-5. The weather was favorable throughout, and the fair was the best our society has ever held, the farmers taking unusual interest in it. The exhibits were exceptionally good in every department. Many of the farmers went home with a determination to bring something better than the other fellow next year

WINNEBAGO.

J. P. BOYD, BUFFALO CENTER, OCTOBER 26, 1906.

GENERAL CONDITION OF CROPS AND SEASON—Taken as a whole the season was a favorable one for all crops.

CORN—In first class condition, and better than the average crop. Will yield about forty bushels per acre.

OATS—Good; yielded from thirty-five to forty-five bushels per acre and overran in weight about one-fifth.

WHEAT—Small acreage, but of average yield and quality.

RYE—None raised.

BARLEY—Small acreage, but of average yield and good quality.

FLAX—Small acreage; average yield and quality.

BUCKWHEAT—Very little raised.

MILLET—Very little raised.

SORGHUM—Very little raised.

TIMOTHY—Heavy yield of hay, but not much cut for seed.

CLOVER—Yielded a heavy crop of hay; very little cut for seed.

Prairie Hay—Exceptionally good.

Potatoes—Large yield, and of good quality.

Vegetables—All kinds did exceptionally well.

Apples—Yielded a good crop, although there is not many raised in this county.

Cattle—Considerable raised, and number growing larger each year. Noticeable improvement in breeding.

Horses—Have done well. Better grades are being raised each year.

Swine—Did well.

Sheep—Very few in county, but are of good breeding.

Poultry—Both common and thoroughbreds raised extensively.

Bees—Industry is not engaged in extensively; honey crop good.

Drainage—Considerable is being done in draining low lands, by both open ditches and tile.

Other Industries—A brick and tile factory was started this season, and local demand for tile is greater than its output.

Lands—Prices have advanced materially during the past season, and indications are that considerable land will change hands the coming year.

Report of Fair—Held at Buffalo Center, September 11-12. The attendance was very good, as was also the exhibits and racing. The stock exhibit was the largest in the history of our society.

WINNESHIEK.

L. L. CADWELL, DECORAH, NOVEMBER 1, 1906.

General Condition of Crops and Season—Good; favorable.

Corn—Acreage about the same as last year, and yield about fifteen per cent greater. Market price 30 cents per bushel.

Oats—Acreage ten per cent greater than last year. Yield about eighty per cent of last year's crop, not full weight, and were bleached. Price 28 cents per bushel.

Wheat—Average acreage and crop. Price 65 cents per bushel.

Rye—Very little raised. Acreage and yield about the same as last year.

Barley—Acreage ten per cent greater than last year, and yield about twenty-five per cent less. Medium grade.

Flax—Increase in acreage twenty per cent, and in yield twenty-five per cent over last year's crop, and of an excellent grade.

Buckwheat—Average acreage and yield six per cent greater than crop of 1905.

Millet—Very little grown except for fodder.

Sorghum—Only grown for forage purposes.

Timothy—Good. Fifteen per cent above crop of 1905.

Clover—Fair.

Prairie Hay—Fair.

Potatoes—Acreage and yield about the same as last year. Rotting to some extent. Price 30 cents per bushel.

Apples—Yield of fall varieties twenty per cent greater than last year. Price 60 cents per bushel.

Cattle—An increase of ten per cent in number over last year.

Horses—Decrease of fifteen per cent from last year in number. Prices range from $100 to $210.

Swine—Fifteen per cent decrease in number from last year.

Sheep—Did well.

Poultry—Ten per cent increase over last year.

Bees—Fair.

Lands—Range in price from $80 to $100 per acre.

Report of Fair—Held at Decorah, September 4-7. Attendance good. All indebtedness has been paid, and we have a small surplus in our treasury.

WORTH.

E. H. MILLER, NORTHWOOD, OCTOBER 6, 1906.

General Condition of Crops and Season—Although an excess of rain in July and August, the general condition of crops has been good.

Corn—An excellent crop, having an exceptionally long, favorable season for maturing.

Oats—Medium yield and of good quality.

Wheat—Very little sown, but yielded a fair crop of good quality.

Rye—Small acreage, but fair yield and good quality.

Barley—Good, both in quality and yield, although damaged to some extent by rains during harvest.

Flax—Average yield, and of good quality.

Buckwheat—Quite a large acreage sown, and yield and quality was good.

Millet—Yield and quality good.

Sorghum—Very little raised.

Timothy—Light yield, but of good quality.

Clover—Badly winter killed; light crop.

Prairie Hay—Good, both in quality and yield.

Potatoes—Promised a fine crop, but excessive rainfall rotted them badly.

Vegetables—Medium.

Apples—Short in yield, but fair in quality.

Other Fruits—Short crop of plums and grapes. Cherries, good.

Cattle—Less than average number. Medium quality.

Horses—Scarce, and high in price.

Swine—The pig crop was fully up to the average of former years, but loss from disease has been very heavy.

Sheep—Scarce, and price high.

Poultry—Plentiful; prices good.

Bees—Did well, early swarms securing a large crop of excellent quality honey.

Drainage—A great deal being done.

Lands—Increasing in value, and some sales being made at good prices.

Report of Fair—Held at Northwood, September 25-27. Favorable weather brought out a good attendance, and our society is in a prosperous condition.

WRIGHT.

G. L. CUTLER, CLARION, OCTOBER 20, 1906.

General Condition of Crops and Season—Crops above the average. Ideal season, with the exception of heavy rains in May.

Corn—A record breaking yield, and of excellent quality.

Oats—Yield and quality good.

Wheat—Very little sown, but yielded a crop of good quality.

Rye—Very little raised.

Barley—Very little, if any, raised.

Flax—None raised.

Buckwheat—Small acreage, but yielded a good crop.

Millet—Good, both in yield and quality.

Sorghum—Very little grown.

Timothy—Good.

Clover—Fair.

Prairie Hay—Very little in county.

Other Grains and Grasses—Good.

Potatoes—Very good yield, and of excellent quality.

Apples—Light yield.

Other Fruits—Good.

Cattle—An increased interest is being taken in the breeding of cattle generally, and there are quite a number of good herds started. Short-Horns predominate. Three hundred and fifty cars were shipped this year at prices ranging from $3.25 to $5.00 per hundred.

Horses—A great many are raised, and their breeding has been noticeably improved during the last few years; especially is this true of the draft lines. It is estimated that one thousand head have been shipped during the past year, at prices ranging from $125 to $200 per head.

Swine—A leading industry of this county. A great deal of interest taken in improved breeding. Estimated that one thousand cars have been shipped during the past year, at prices ranging from $4.50 to $6.50 per hundred pounds. No disease reported.

Sheep—Not many in this county, but did well the past season, making a good profit.

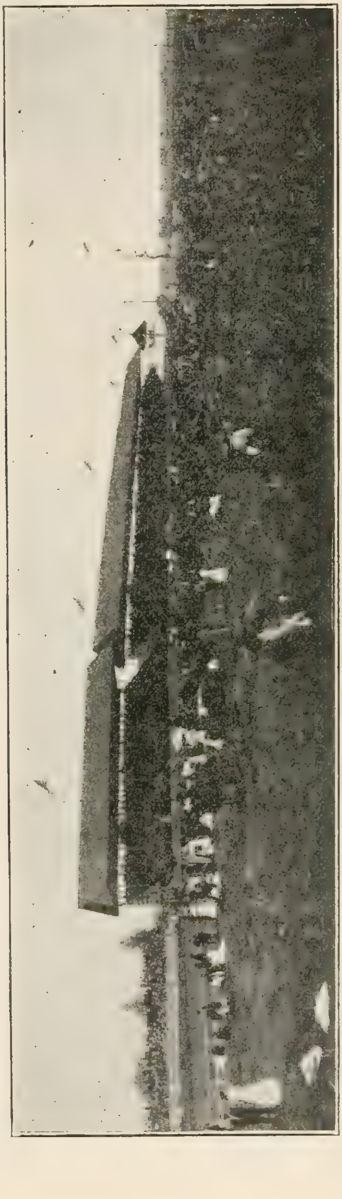
Poultry—An extensive industry. Many thousand dollars' worth of birds and eggs are shipped annually. No disease reported this season.

Bees—Very few in county.

Drainage—A great deal being done. Twenty-six drainage districts formed in the county during the last three years. A great deal of tile being laid, the entire output of the two factories in the county being used locally, and in addition hundreds of carloads shipped in.

Lands—Prices range from $60 to $90 per acre, with very little changing hands.

Report of Fair—Held at Clarion, September 4-7. The attendance was not large, although we had a very creditable exhibit.



Crowds watching the races and track amusements, Iowa State Fair, 1906.

1906 FINANCIAL STATEMENTS OF COUNTY AND DISTRICT FAIRS IN IOWA RECEIVING STATE AID 1906

Marginal No.	County or District	Value of Property	RECEIPTS					DISBURSEMENTS						Marginal No.
			Balance on hand November 1, 1905	Miscellaneous Receipts for 1906	State Appropriations, 1906	Overdrafts for 1906	Total Receipts for 1906	Miscellaneous Expenses for 1906	Speed Premiums Paid 1906	Other Premiums Paid 1906	Balance on hand November 1, 1906	Total Disbursements for 1906	Indebtedness for 1906	
1	Adair	$ 6,000.00		$ 3,030.10	$ 200.00		$ 3,230.10	$ 1,983.87	$ 722.32	$ 523.91		$ 3,230.10	$ 1,919.71	1
2	Adams	5,000.00	$ 5.06	4,034.17	200.00		4,239.23	1,969.20	1,331.41	658.82	$ 279.80	4,239.23		2
3	Allamakee	4,000.00	47.41	1,639.50	200.00		1,886.91	1,150.00	*	505.75	231.16	1,886.91		3
4	Audubon	7,000.00	193.95	2,636.85	200.00		3,030.80	482.61	1,425.00	530.35	592.84	3,030.80	700.00	4
5	Black Hawk, La Porte City Dist	6,000.00		1,842.10	200.00		2,042.10	777.31	690.00	522.45	52.34	2,042.10	2,258.56	5
6	Boone	5,000.00		1,159.10	200.00		1,359.10	393.40	165.25	525.95	274.50	1,359.10	2,195.31	6
7	Buchanan	10,000.00	.84	2,283.29	200.00		2,484.13	1,550.75	112.00	709.14	112.24	2,484.13	1,000.00	7
8	Buena Vista	15,000.00	255.00	6,296.26	200.00		6,751.26	2,944.25	2,750.00	1,000.25	56.76	6,751.26		8
9	Butler	2,500.00	4.28	1,958.39	200.00		2,162.67	902.61	330.22	645.25	284.58	2,162.67	800.00	9
10	Calhoun	5,000.00		2,543.80	200.00		2,743.80	1,823.90	175.00	659.75	85.15	2,743.80	1,600.00	10
11	Cass	9,500.00		4,268.35	200.00		4,468.35	2,150.75	1,286.25	943.11	88.24	4,468.35	2,900.00	11
12	Cass—Massena Dist	2,912.77		3,084.86	200.00		3,284.86	1,890.66	717.90	531.90	144.40	3,284.86		12
13	Cedar—Tipton Dist	5,000.00		2,550.55	200.00		2,750.55	676.00	1,033.00	797.85	243.70	2,750.55	2,500.00	13
14	Chickasaw—Big Four Fair Assn	6,500.00	421.52	2,569.73	200.00		3,191.25	1,125.38		895.00	1,170.87	3,191.25	3,000.00	14
15	Clayton	3,000.00	17.48	3,389.50	200.00		3,606.98	1,975.40	762.50	856.60	12.48	3,606.98		15
16	Clayton — Elkader Assn	8,000.00		4,117.00	200.00		4,317.00	2,177.58	1,605.00	532.25	2.17	4,317.00	3,765.00	16
17	Clinton	5,000.00	438.81	5,318.44	200.00		5,957.25	3,020.11	1,612.00	1,125.50	199.64	5,957.25	1,500.00	17
18	Clinton—Clinton Dist	9,785.69	90.73	5,737.45	200.00		6,028.18	3,172.25	1,545.00	1,021.30	289.63	6,028.18		18
19	Davis	7,000.00		2,907.20	200.00		3,107.20	778.45	1,289.25	943.50	96.00	3,107.20	1,200.00	19
20	Delaware	6,800.00	1.84	3,431.46	200.00	498.50	4,131.80	1,483.30	1,950.00	698.50		4,131.80	2,645.60	20
21	Fayette	6,000.00	7.35	4,189.75	200.00		4,397.10	2,798.13	654.00	712.50	232.47	4,397.10		21
22	Floyd	5,000.00	200.00	2,594.79	200.00	65.27	3,060.06	2,184.31	350.00	525.75		3,060.06	265.27	22
23	Franklin	6,500.00		2,448.40	200.00	182.63	2,831.03	1,292.03	868.00	671.00		2,831.03	1,950.00	23
24	Grundy	4,500.00	170.94	3,069.58	200.00		3,440.52	2,276.12	130.00	680.00	354.40	3,440.52		24
25	Guthrie	6,000.00		2,954.60	200.00		3,154.60	1,024.51	1,275.00	715.32	139.77	3,154.60	1,200.00	25
26	Hancock	2,500.00		1,771.30	200.00		1,971.30	901.40	560.00	509.90		1,971.30	1,100.00	26
27	Hardin	5,000.00		6,185.00	200.00		6,385.00	2,863.50	2,410.00	1,031.50	80.00	6,385.00	1,000.00	27
28	Harrison	2,000.00		1,882.40	200.00		2,082.40	761.27	665.45	578.50	77.18	2,082.40	436.63	28
29	Henry	16,000.00	65.70	7,566.76	200.00		7,832.46	4,446.81	2,030.00	1,156.15	139.50	7,832.46	450.00	29

FINANCIAL STATEMENTS OF COUNTY AND DISTRICT FAIRS IN IOWA RECEIVING STATE AID—CONTINUED.

Marginal No.	COUNTY OR DISTRICT	Value of Property	RECEIPTS					DISBURSEMENTS						Marginal No.
			Balonce on hand November 1, 1905	Miscellaneous Receipts for 1906	State Appropriations, 1906	Overdrafts for 1906	Total Receipts for 1906	Miscellaneous Expenses for 1906	Speed Premiums Paid 1906	Other Premiums Paid 1906	Balance on hand November 1, 1906	Total Disbursements for 1906	Indebtedness for 1906	
30	Henry — Winfield Assn	5,000.00	428.75	2,743.82	200.00	60.43	3,436.00	1,538.50	795.50	1,102.00		3,436.00	60.43	30
31	Humboldt	3,000.00		3,511.81	200.00		3,711.81	2,746.36	390.00	575.45		3,711.81		31
32	Iowa	4,000.00	8.78	2,154.22	181.61		2,347.64	951.33	819.75	462.60	80.96	2,347.64	1,500.00	32
33	Iowa—Victor Dist	2,700.00	101.00	2,173.00	200.00		2,567.00	1,154.00	697.00	507.00	209.00	2,567.00	850.00	33
34	Iowa —Williamsburg Assn	5,000.00		1,755.77	200.00		1,955.77	933.36	55.00	665.00	302.41	1,955.77	3,000.00	34
35	Jackson	10,000.00	287.23	4,375.25	200.00		4,862.48	1,944.00	1,706.00	1,002.15	210.33	4,862.48	3,000.00	35
36	Jasper	10,000.00	140.46	3,466.52	200.00		3,806.98	1,443.70	1,307.50	825.09	230.69	3,806.98	1,500.00	36
37	Jefferson	7,000.00	79.52	3,303.25	200.00		3,582.77	636.00	1,640.00	738.75	568.02	3,582.77	1,600.00	37
38	Johnson	11,000.00	9.30	3,976.21	200.00		4,185.51	1,697.15	1,335.00	915.50	237.86	4,185.51	4,000.00	38
39	Jones	2,400.00	108.25	4,202.22	189.66		4,500.13	3,252.88	415.00	474.15	358.10	4,500.13		39
40	Jones—Anamosa Assn	6,000.00	123.79	6,845.41	200.00		7,169,20	4,086.66	2,230.00	520.00	332.54	7,169.20	4,000.00	40
41	Keokuk—What Cheer Dist	5,000.00	241.04	4,140.00	200.00	227.04	4,808.08	2,419.58	1,825.00	563.50		4,808.08		41
42	Kossuth	10,000.00	201.48	7,996.60	200.00		8,398.08	5,624.06	703.30	823.90	1,246.82	8,398.08	4,000.00	42
43	Lee	2,000.00	68.58	2,056.75	200.00		2,325.33	918.23	870.00	498.85	38.25	2,325.33		43
44	Lee—West Point Dist	4,000.00	35.28	2,116.75	200.00		2,352.03	776.03	920.00	656.00		2,352.03	1,800.00	44
45	Linn—Wapsie Valley Assn	4,800.00		2,453.49	200.00		2,653.49	1,512.77	25.00	970.00	145.72	2,653.49	2,600.00	45
46	Louisa—Wapello Dist	5,000.00		3,451.39	200.00		3,651.39	1,323.31	990.00	1,193.50	144.58	3,651.39	1,800.00	46
47	Louisa — Columbus Junction Dist	7,000.00		4,204.65	200.00		4,404.65	1,905.29	862.50	1,536.75	73.11	4,404.65	3,800.00	47
48	Lyon	12,000.00	11,240.00	4,285.80	200.00		15,725.80	12,890.49	1,351.25	531.75	952.31	15,725.80		48
49	Madison	3,000.00		4,307.75	200.00		4,507.75	2,661.00	886.25	678.50	282.00	4,507.75	2,000.00	49
50	Mahaska	6,000.00	373.53	3,292.40	200.00		3,865.93	2,254.90	900.00	698.00	13.03	3,865.93		50
51	Marion	7,500.00	1,458.41	3,145.13	200.00	1,380.66	6,184.29	4,908.85	595.00	680.35		6,184.20	1,380.66	51
52	Marshall	4,204.25		9,824.75	200.00		10,024.75	5,920.92	1,539.00	1,095.85	1,468.98	10,024.75		52
53	Marshall—Eden Dist	2,400.00		1,412.75	200.00	197.43	1,810.18	1,159.93		650.25		1,810.18	543.68	53
54	Mills	5,000.00	21.75	910.25	113.16		1,045.16	639.75		281.00	124.41	1,045.16	425.00	54
55	Mitchell	4,000.00	239.76	2,601.24	200.00		3,041.00	1,416.12	615.00	651.50	358.38	3,041.00	780.00	55
56	Monona	7,500.00		2,013.62	200.00	213.52	2,427.14	755.29	1,160.50	511.35		2,427.14		56
57	Montgomery	10,000,00	198.07	3,317.56	200.00	515,66	4,231.29	1,946.19	1,507.50	777.60		4,231,29	2,000.00	57

58	Muscatine—Union Dist	5,000.00	203.93	4,871.90	200.00	------	5,275.83	1,614.17	1,830.00	1,616.50	215.16	5,275.83	400.00	58
59	Muscatine — Wilton Assn	1,500.00	------	2,723.26	200.00	------	2,923.26	1,113.01	1,237.50	572.75	------	2,923.26	------	59
60	O'Brien	3,000.00	406.23	3,661.46	200.00	------	4,270.69	2,344.60	1,250.00	562.19	113.84	4,270.69	1,200.00	60
61	O'Brien — Sheldon Dist	3,000.00	481.75	4,166.32	200.00	------	4,848.07	1,955.76	2,005.00	580.25	307.06	4,848.07	------	61
62	Page—Clarinda Assn	15,000.00	45.84	3,731.38	200.00	------	3,977.22	1,935.30	1,292.00	567.11	182.75	3,977.22	------	62
63	Page — Shenandoah Assn	10,000.00	------	6,091.81	200.00	------	6,291.81	2,141.95	1,691.20	922.30	1,536.36	6,291.81	------	63
64	Palo Alto	3,700.00	69.80	1,828.69	198.29	------	2,096.78	693.90	820.00	498.20	84.68	2,096.78	629.00	64
65	Pocahontas — Big 4 Assn	10,000.00	------	4,526.05	200.00	------	4,726.05	1,666.41	2,400.00	611.00	48.64	4,726.05	1,270.94	65
66	Pottawattamie	7,000.00	76.02	2,591.65	200.00	------	2,867.67	1,054.38	823.00	694.16	296.13	2,867.67	1,350.00	66
67	Poweshiek— Grinnell	9,000.00	------	3,331.95	200.00	------	3,531.95	1,850.41	963.25	540.95	177.34	3,531.95	3,875.00	67
68	Poweshiek —Malcom	4,500.00	88.55	2,965.00	200.00	------	3,253.55	1,156.10	1,250.00	645.00	202.45	3,253.55	------	68
69	Ringgold	4,000.00	------	1,961.57	200.00	427.81	2,589.38	1,336.88	481.35	771.15	------	2,589.38	1,900.00	69
70	Sac	3,000.00	------	3,819.03	200.00	------	4,019.03	736.00	2,550.00	596.90	136.13	4,019.03	------	70
71	Shelby	8,000.00	------	2,345.63	160.05	------	2,505.68	955.45	1,088.00	400.13	62.10	2,505.68	------	71
72	Sioux	3,000.00	137.76	1,632.05	200.00	303.78	2,273.59	1,501.44	260.00	512.15	------	2,273.59	700.00	72
73	Sioux—Rock Valley Dist	4,500.00	------	1,248.78	200.00	------	1,448.78	250.00	500.00	501.75	197.03	1,448.78	1,500.00	73
74	Story	4,500.00	36.34	5,956.36	200.00	------	6,192.70	4,950.61	151.25	895.06	195.78	6,192.70	3,028.42	74
75	Tama	2,500.00	217.82	3,502.04	200.00	------	3,919.86	1,835.55	1,032.50	842.80	209.01	3,919.86	------	75
76	Taylor	4,000.00	154.08	2,509.71	200.00	246.38	3,110.17	1,240.16	1,308.25	561.76	------	3,110.17	------	76
77	Union—Creston Dist	10,000.00	------	4,725.34	200.00	------	4,925.34	2,080.54	1,398.50	940.00	506.30	4,925.34	------	77
78	Van Buren—Milton Dist	4,000.00	------	1,480.60	200.00	215.90	1,896.50	425.50	955.00	516.00	------	1,896.50	1,600.00	78
79	Warren	10,000.00	------	4,157.26	200.00	------	4,357.26	668.20	2,531.00	1,028.00	130.06	4,357.26	7,600.00	79
80	Winebago — Forest City Assn	3,500.00	536.41	3,033.11	200.00	------	3,769.52	2,534.32	100.00	840.50	294.70	3,769.52	------	80
81	Winnebago - Buffalo Center Assn	2,500.00	------	633.10	160.47	349.60	1,146.17	419.49	325.50	401.18	------	1,146.17	1,000.00	81
82	Winneshiek	5,000.00	76.11	2,018.28	200.00	------	2,294.39	122.52	330.00	512.85	489.02	2,294.39	------	82
83	Worth	4,000.00	151.73	1,576.05	200.00	------	1,927.78	1,030.02	275.00	534.48	88.28	1,927.78	228.26	83
84	Wright	4,500.00	------	831.00	189.96	.07	1,021.03	546.13	------	474.90	------	1,021.03	2,200.00	84
	Total 1905 statements	$496,702.71	$20,061.26	$279,427.42	$16,596.23	$ 4,884.77	$320,969.68	$159,334.43	$83,583.91	$59,961.20	$18,090.14	$320,969.68	$103,507.47	
	Total 1906 statements	$496,702.71	$20,061.26	$279,427.42	$16,596.23	$ 4,884.77								

*Included in miscellaneous.

SUMMARY OF LAST SIX YEARS' STATEMENTS, FOR COMPARISON.

Year and Number of Counties Reporting	RECEIPTS				DISBURSEMENTS					
	Balance November 1	Miscellaneous Receipts	Overdrafts	Total Receipts	Miscellaneous Expenses	Speed Premiums Paid	Other Premiums Paid	Balance on hand November 1	Total Disbursements	Indebtedness
1901—82 counties reporting	$ 8,574.60	$225,063.70	$ 8,165.32	$241,803.71	$106,503.53	$60,033.39	$53,203.72	$12,973.17	$241,803.71	$78,882.83
1902—79 counties reporting	9,984.16	229,142.29	5,978.98	245,105.43	104,903.35	75,376.56	49,078.36	15,747.16	245,105.43	81,136.06
1903—71 counties reporting	13,628.62	220,270.38	11,728.60	245,627.60	112,310.15	72,067.48	50,410.49	10,839.48	245,627.60	105,886.26
1904—79 counties reporting	5,210.64	252,022.75	7,174.78	264,408.17	114,689.38	82,175.43	54,326.08	13,217.28	264,408.17	91,325.89
1905—80 counties reporting	10,269.76	236,251.08	10,590.76	257,111.60	116,712.54	73,203.45	55,505.93	11,689.68	257,111.60	92,391.02
1906—84 counties reporting	20,061.26	296,023.65	4,884.77	320,969.68	159,334.43	83,583.91	59,961.20	18,090.14	320,969.68	103,507.47

PART XIII.

Directory of Associations and Organizations Representing Agricultural Interests in Iowa and Other States.

Iowa Department of Agriculture: President, C. E. Cameron, Alta; Vice-President, W. C. Brown, Clarion; Secretary, J. C. Simpson, Des Moines; Treasurer, G. D. Ellyson, Des Moines.

Iowa State Horticultural Society: President, W. A. Burnap, Clear Lake; Vice-President, W. M. Bomberger, Harlan; Secretary, Wesley Greene, Des Moines; Treasurer, Elmer M. Reeves, Waverly.

Iowa Park and Forestry Association: President, L. H. Pammel, Ames; Vice-President, W. A. Burnap, Clear Lake; Secretary, T. H. McBride, Iowa City; Treasurer, H. F. Wickham, Iowa City.

Society of Iowa Florists: President, Theodore Ewoldt, Davenport; Vice-President, Judson A. Kramer, Cedar Rapids; Secretary, Wesley Greene, Des Moines; Treasurer, W. A. Harkett, Dubuque.

Iowa Grain Dealers' Association: President, J. A. Tiedman, Fonda; Secretary-Treasurer, Geo. A. Wells, Des Moines.

Iowa Corn Growers' Association: President, Asa Turner, Farrar; Vice-President, John Sundberg, Whiting; Secretary, Prof. M. L. Bowman, Ames; Treasurer, L. W. Forman, Ames.

The Corn Belt Meat Producers' Association: President, A. Sykes, Ida Grove; Vice-President, C. W. Maher, Fort Dodge; Secretary, H. C. Wallace, Des Moines; Treasurer, Chas. Goodenow, Wall Lake.

Iowa Good Roads Association: President, H. A. Harlow, Onawa; Vice-President, A. C. Steele, Coon Rapids; Secretary, Thos. B. MacDonald, Ames.

Iowa Improved Live Stock Breeders' Association: President, E. M. Wentworth, State Center; Vice-President, G. H. Burge, Mount Vernon; Secretary-Treasurer, W. J. Kennedy.

The Farmers' Grain Dealers' Association of Iowa: President, J. H. Brown, Rockwell; Vice-President, B. Hathaway, Pierson; Secretary, C. G. Messerole, Gowrie; Treasurer, Peter Gorman, Dougherty.

Eastern Central Iowa Farmers' Institute Association: President, Fred McCulloch, Hartwick; Vice-President, T. H. Carrothers, Ryan; Secretary-Treasurer, Chas. J. Winter, Washington.

IOWA SWINE BREEDERS' ASSOCIATION: President, Wm. D. McTavish, Coggon; Vice-President, John M. Cox, Jr., Harlan; Secretary, C. C. Carlin, Des Moines.

IOWA STATE DAIRY ASSOCIATION: President, S. B. Shilling, Mason City; Vice-President, W. B. Barney, Hampton; Secretary, W. B. Johnson, Des Moines; Treasurer, F. M. Brown, Cedar Rapids.

COUNTY FARMERS' INSTITUTES IN IOWA.

ADAIR—President, A. C. Savage, Adair; Secretary, D. J. Cowden, Adair.

ADAMS—President, C. T. O'Key, Prescott; Secretary, T. E. Shanley, Prescott.

AUDUBON—President, H. F. Jones, Hamlin; Secretary, A. H. Edwards, Audubon.

BENTON—President, S. A. McAndless, Belle Plaine; Secretary, George Ahrens, Belle Plaine.

BLACK HAWK—President, E. M. Lichty, Waterloo; Secretary, E. E. Sage, Waterloo.

BOONE—President, B. F. Keister, Ogden; Secretary, V. E. Donelson, Ogden.

BREMER—President, J. W. Bennett, Janesville; Secretary, E. M. Reeves, Waverly.

BUCHANAN—President, W. H. Warburton, Independence; Secretary, W. H. Miller, Independence.

BUENA VISTA—President, C. F. Kinne, Storm Lake; Secretary, S. R. Haines, Storm Lake.

BUTLER—President, Geo. Adair, Shell Rock; Secretary, B. Leavens, Shell Rock.

CALHOUN—President, W. F. Schwarck, Lohrville; Secretary, Henry Parsons, Rockwell City.

CARROLL—President, G. F. Titer; Secretary, N. Raygor, Coon Rapids.

CEDAR—President, Wm. Test, West Branch; Secretary, Mrs. C. C. Hampton, West Branch.

CERRO GORDO—President, D. McArthur, Mason City; Secretary, A. M. Avery, Mason City.

CHEROKEE—President, A. A. Coburn, Marcus; Secretary, A. T. Zimmerman, Washta.

CHICKASAW—President, J. M. Heald, Nashua; Secretary, E. E. Tracy, Nashua.

CLAY—President, F. H. Black, Spencer; Secretary, Miss Clara Hopson, Dickens.

CLAYTON—President, A. R. Carrier, Strawberry Point; Secretary, John Knight, Strawberry Point.

CLINTON—President, W. L. Dennatt, Low Moor; Secretary, L. S. Hastings, De Witt.

DALLAS—President, Edward Vial, Adel; Secretary, M. Graham, Adel.

DECATUR—President, Wm. Chriehton, Leon; Secretary, Claude Wood, Weldon.

DELAWARE—President, T. H. Carrothers, Ryan; Secretary, C. A. Clute, Manchester.

DICKINSON—President, J. H. Gregory, Spirit Lake; Secretary, J. B. Marston, Spirit Lake.

DUBUQUE—President, W. A. Fairburn, Cascade; Secretary, Fred Kurt, Cascade.

EMMET—President, Wm. Stewart, Armstrong; Secretary, Arthur Pitcher, Estherville.

FLOYD—President, D. M. Kulein, Rudd; Secretary, Edwin Ryner, Rudd.

FRANKLIN—President, Oliver Yelland, Sheffield; Secretary, F. H. Dirst, Hampton.

FREMONT—President, I. P. Dixon, Sidney; Secretary, T. W. Hutchinson, Anderson.

GREENE—President, J. E. Mess, Scranton; Secretary, Lafe Cochran, Scranton.

GRUNDY—President, Wm. Mooty, Grundy Center; Secretary, Lewis Plager, Grundy Center.

GUTHRIE—President, Grant Chapman, Bagley; Secretary, S. J. Reed, Guthrie Center.

HANCOCK—President, F. J. Oxley, Corwith; Secretary, John Schawb, Stilson.

HARDIN—President, J. B. Parmalee, Iowa Falls; Secretary, W. E. Carpenter, Iowa Falls.

HARRISON—President, W. S. Kelley, Mondamin; Secretary, Mrs. Peter Peterson, Logan.

HOWARD—President, W. T. Forry, Cresco; Secretary, J. J. Driscol, Cresco.

HUMBOLDT—President, T. H. Gamble, Humboldt; Secretary, A. J. Hock, Humboldt.

IDA—President, E. G. Preston, Battle Creek; Secretary, Chas. Brewck, Battle Creek.

IOWA—President, Fred Turner, North English; Secretary, F. B. Boland, Williamsburg.

JACKSON—President, L. B. Parshall, Canton; Secretary, L. L. Littlefield.

JASPER—President, T. J. Kating, Newton; Secretary, John Hawn, Newton.

JEFFERSON—President, Jno. P. Manatrey, Fairfield; Secretary, Jno. R. McElderry, Fairfield.

JOHNSON—President, Mr. Wray, North Liberty; Secretary, Ed Murphy, North Liberty.

KEOKUK—President, W. S. Chacy, Nugent; Secretary, G. E. Barnhart, South English.

KOSSUTH—President, M. De L. Parsons, Irvington; Secretary, J. B. Hofins.

LEE—President, Joseph Fry, Wever; Secretary, E. C. Lynn, Donnellson.

LINN—President, Robt. F. Kennedy, Springville; Secretary, Fred Bailey, Springville.

LOUISA—President, I. M. Jamison, Wapello; Secretary, Nelson Cowles, Morning Sun.

LUCAS—President, S. A. Threlkeld, Chariton; Secretary, J. C. Williamson, Chariton.

LYON—President, E. C. Elliott, Inwood; Secretary, C. B. Lamkin, Inwood.

MADISON—President, Henry Hawk, Winterset; Secretary, A. M. Meacham, Winterset.

MAHASKA—President, E. F. Hanna, Route No. 1, Lacey; Secretary, F. F. Everett, Route No. 1, Lacey.

MARION—President, D. Ward, Knoxville; Secretary, J. D. Schlotterback, Knoxville.

MARSHALL—President, E. M. Wentworth, State Center; Secretary, Merritt Greene, Jr., Marshalltown.

MILLS—President, J. M. Anthony, Glenwood; Secretary, G. Hanson, Glenwood.

MITCHELL—President, R. Dorsey, Osage; Secretary, D. F. Sheehan, Osage.

MONONA—President, W. C. Whiting, Whiting; Secretary, S. Reed, Fletcher.

MONROE—President, E. B. Morris, Albia; Secretary, W. A. Rowles, Albia.

MUSCATINE—President, A. Kexrath, Wilton Junction; Secretary, C. W. Morton, Wilton Junction.

O'BRIEN—President, Frank Martin, Gaza; Secretary, Alvin Potter, Paullina.

OSCEOLA—President, W. J. Reeves, Sibley; Secretary, C. W. Sollitt, Sibley.

PAGE—President, G. M. Trimble, College Springs; Secretary, E. F. Badge, College Springs.

PALO ALTO—President, Wm. Penn, Graettinger; Secretary, E. M. Thompson, Graettinger.

POCAHONTAS—President, C. M. Saylor, Pomeroy; Secretary, Ed Meredith, Havelock.

POLK—President, O. O. Brewbaker, Ankeny; Secretary, Nelson Gormley, Bondurant.

POWESHIEK—President, H. H. Annell, Deep River; Secretary, A. R. Hughes, Deep River.

RINGGOLD—President, W. F. Sconce, Route No. 1, Benton; Secretary, Walter H. Beal, Mount Ayr.

SAC—President, Harry Baxter, Sac City; Secretary, Mrs. Robt. Englehardt, Sac City.

SCOTT—President, Chris Marti, Donahue; Secretary, R. M. Rohlfs, Route No. 4, Davenport.

SHELBY—President, H. B. Kees, Harlan; Secretary, W. M. Bomberger, Harlan.

SIOUX—President, J. C. Emery, Orange City; Secretary, Geo. A. Sheldon, Hull.

STORY—President, W. P. George, Ames; Secretary, J. M. Chrisman, Ames.

TAMA—President, Chalk Lambert, Buckingham; Secretary, R. C. Wood, Traer.

SOUTH TAMA—President, Steve Dye, Tama; Secretary, Roscoe Mericle, Toledo.

Taylor—President, Jas. Edmunds, Lenox; Secretary, G. E. Campbell, Gravity.

Union—President, L. J. Day, Route No. 5, Afton; Secretary, Will Boys, Route No. 2, Creston.

Van Buren—President, Wm. Mort, Keosauqua; Secretary, C. C. Rambo, Keosauqua.

Wapello—President, W. A. C. Brown, Route No. 5, Ottumwa; Secretary, R. C. Hofmann, Route No. 5, Hedrick.

Warren—President, E. B. Igo, Indianola; Secretary, Don L. Berry, Indianola.

Washington—President, David McLaughlin; Secretary, A. R. Miller, Washington.

Wayne—President, J. F. Holiday, Allerton; Secretary, O. B. Cobb, Allerton.

Winnebago—President, Eugene Secor, Forest City; Secretary, J. H. Anderson, Forest City.

Winneshiek—President, John McMillan, Marble, Minnesota; Secretary, W. Albert Van Vliet, Prosper, Minnesota.

Worth—President, T. L. Bolton, Northwood; Secretary, E. J. McQuatters, Northwood.

Wright—President, F. A. Thayer, Dows; Secretary, A. C. Fuller, Dows.

COUNTY AND DISTRICT AGRICULTURAL SOCIETIES AND FAIR ASSOCIATIONS IN IOWA.

Adair—Adair County Society, Greenfield; President, Dr. F. P. Culverson; Secretary, W. W. West.

Adams—Adams County Society, Corning; President, S. M. Ritchey; Secretary, Geo. E. Bliss.

Allamakee—Allamakee County Society, Waukon; President, S. H. Opfer; Secretary, A. C. Larson.

Appanoose—Appanoose County Society, Centerville; President, J. A. Bradley; Secretary, H. A. Russell.

Audubon—Audubon County Society, Audubon; President, G. W. Hoover; Secretary, O. B. Train.

Benton—Benton County Society, Vinton; President, I. Mitchell; Secretary, G. D. McElroy.

Black Hawk—La Porte District Society, La Porte City; President, Jos. Husman; Secretary, B. L. Manwell.

Boone—Boone County Society, Ogden; President, C. H. Williams; Secretary, W. Hiland.

Boone—Boone Driving Park and Fair Association, Boone; President, W. R. Matt; Secretary, Chas. Otis.

Buchanan—Buchanan County Society, Independence; President, Rudolph Leytze; Secretary, Chas. E. Purdy.

Buena Vista—Buena Vista County Society, Alta; President, M. Adams; Secretary, Samuel Parker.

BUTLER—Butler County Society, Allison; President, John Coster, Shell Rock; Secretary, M. B. Speedy.

CALHOUN—Calhoun County Society, Manson; President, Thos. Griffin; Secretary, C. G. Kaskey.

CALHOUN—Rockwell City Fair Association, Rockwell City; President, Andrew Stewart; Secretary, W. Q. Stewart.

CASS—Cass County Society, Atlantic; President, M. A. Bell; Secretary, J. A. McWaid.

CASS—Massena District Society, Massena; President, S. D. Wyckoff; Secretary, C. L. Herring.

CARROLL—Carroll Fair and Driving Park Association, Carroll; President, H. D. Haselton; Secretary, H. C. Stevens.

CEDAR—Tipton Fair Association, Tipton; President, L. J. Rowell; Secretary, F. H. Connor.

CHICKASAW—Big Four Association, Nashua; President, W. A. Granger, Nashua; Secretary, G. C. Hoyer.

CLAYTON—Clayton County Society, National; President, Joseph Matt; Secretary, H. Luehsen, Jr.

CLAYTON—Strawberry Point District Society, Strawberry Point; President, G. F. Wheeler; Secretary, J. C. Flenniken.

CLAYTON—Elkader Fair and Track Association, Elkader; President, J. A. Kramer; Secretary, W. W. Davidson.

CLINTON—Clinton County Society, De Witt; President, L. D. Winner; Secretary, A. M. Price.

CLINTON—Clinton District Society, Clinton; President, Jno. L. Wilson; Secretary, J. B. Ahrens.

DAVIS—Davis County Society, Bloomfield; President, J. M. Lain; Secretary, J. C. Broughard.

DELAWARE—Delaware County Society, Manchester; President, L. L. Hoyt; Secretary, J. J. Pentony.

DES MOINES—Des Moines County Society, Burlington; President, John B. Hunt; Secretary, C. C. Fowler.

FAYETTE—Fayette County Society, West Union; President, J. S. Smith; Secretary, E. A. McElree.

FLOYD—Floyd County Society, Charles City; President W. D. Lindaman; Secretary, W. B. Johnson.

FRANKLIN—Franklin County Society, Hampton; President, J. V. Blackford; Secretary, Floyd Gillett.

GRUNDY—Grundy County Society, Grundy Center; President, H. N. Dilley; Secretary, C. E. Thomas.

GUTHRIE—Guthrie County Society, Guthrie Center; President, John G. Thomas; Secretary, T. E. Grissell.

HAMILTON—Hamilton County Society, Webster City; President, F. A. P. Tatham; Secretary, F. A. Edwards.

HANCOCK—Hancock County Society, Britt; President, F. B. Rogers; Secretary, John Hammill.

HARDIN—Hardin County Society, Eldora; President, R. B. Lynk; Secretary, H. S. Martin.

HARRISON—Harrison County Society, Missouri Valley; President, C. H. Deur; Secretary, W. H. Withrow.

HENRY—Henry County Society, Mount Pleasant; President, T. F. Campbell; Secretary, W. D. Worthington.

HENRY—Winfield Fair Association, Winfield; President, J. I. Van Syoc; Secretary, W. D. Garmoe.

HUMBOLDT—Humboldt County Society, Humboldt; President, L. C. Tranger; Secretary, John Cunningham.

IOWA—Iowa County Society, Marengo; President, C. M. Beem; Secretary, Alex McLennan.

IOWA—Victor District Society, Victor; President, Charles Raffensperger; Secretary, J. P. Bowling.

IOWA—Williamsburg Fair Association, Williamsburg; President, Ellis Lloyd; Secretary, Charles Fletcher.

JACKSON—Jackson County Society, Maquoketa; President, Jos. Dostal; Secretary, B. D. Ely.

JASPER—Jasper County Society, Newton; President, Louie Aillaud; Secretary, Andy Stewart.

JEFFERSON—Jefferson County Society, Fairfield; President, J. P. Manatrey; Secretary, R. S. Sayers.

JOHNSON—Johnson County Society, Iowa City; President, Robert Graham; Secretary, Geo. Hitchcock.

JONES—Jones County Society, Monticello; President, J. E. Bateman; Secretary, J. J. Lecher.

JONES—Anamosa Fair Association, Anamosa; President, John Gildner; Secretary, Dr. L. N. Russell.

KEOKUK—What Cheer District Society, What Cheer; President, Jas. Stephenson; Secretary, Geo. A. Poff.

KOSSUTH—Kossuth County Society, Algona; President, J. M. Farley; Secretary, T. H. Wadsworth.

LEE—Lee County Society, Donnellson; President John Haffner; Secretary, Chris Haffner.

LEE—West Point District Society, West Point; President, John Lachmann; Secretary, John Walljasper.

LINN—Wapsie Valley Fair Association, Central City; President, E. M. Lanning; Secretary, E. E. Henderson.

LINN—Prairie Valley Fair Association, Fairfax; President, Henry Lefebure; Secretary, E. Heaton.

LINN—Marion Interstate Fair Association, Marion; President, F. H. Wieneke; Secretary, J. B. Travis.

LOUISA—Wapello District Fair Association, Wapello; President, M. L. Jamison; Secretary, A. H. Rundorff.

LOUISA—Columbus Junction District Fair Association, Columbus Junction; President, O. P. Wilcox; Secretary, N. T. Hendrix.

LYON—Lyon County Society, Rock Rapids; President, J. H. Harrison; Secretary, A. S. Wold.

MADISON—Madison County Society, Winterset; President, A. D. Guy; Secretary, J. W. Miller.

MAHASKA—Mahaska County Society, Oskaloosa; President, C. B. McCulloch; Secretary, J. H. Harrison.

MAHASKA—New Sharon Society, New Sharon; President, Sidney Harper; Secretary, T. R. Osborn.

MARION—Lake Prairie District Society, Pella; President, T. D. Tice; Secretary, J. H. Stubenrauch.

MARSHALL—Eden District Society, Rhodes; President, H. G. Buck; Secretary, H. F. Stouffer.

MARSHALL—Marshall County Society, Marshalltown; President, J. B. Classen; Secretary, W. M. Clark.

MILLS—Mills County Society, Malvern; President, Sherman Jones; Secretary, J. T. Ward.

MITCHELL—Mitchell County Society, Osage; President, Richard Dorsey; Secretary, W. H. H. Gable.

MONONA—Monona County Society, Onawa; President, C. H. Bradbury; Secretary, A. W. Burgess.

MONTGOMERY—Montgomery County Society, Red Oak; President, A. R. Tracy; Secretary, W. S. Ellis.

MUSCATINE—Union District Society, West Liberty; President, W. P. Nichols; Secretary, W. H. Shipman.

MUSCATINE—Wilton Fair Association, Wilton Junction; President, W. G. Griffith; Secretary, H. Wildasin.

O'BRIEN—O'Brien County Society, Sutherland; President, Chas. Youde; Secretary, R. R. Crum.

O'BRIEN—Sheldon District Society, Sheldon; President, H. Runger; Secretary, Joe Morton.

PAGE—Clarinda Fair Association, Clarinda; President, C. E. McDowell; Secretary, J. C. Bickner.

PAGE—Shenandoah Fair Association, Shenandoah; President, Chas. Aldrich; Secretary, A. W. Goldberg.

PALO ALTO—Palo Alto County Fair and Racing Association, Emmetsburg; President, W. S. Parnham; Secretary, P. V. Hand.

POCAHONTAS—Big Four District Society, Fonda; President, R. F. Beswick; Secretary, John Forbes.

POTTAWATTAMIE—Pottawattamie County Society, Avoca; President, F. G. Hetzel; Secretary, Caleb Smith.

POWESHIEK—Central Society at Malcom; President, Wm. McClure; Secretary, James Nowak.

POWESHIEK—Central Society at Grinnell, President, Samuel Jacob; Secretary, I. S. Bailey, Jr.

RINGGOLD—Ringgold County Society, Mount Ayr; President, D. B. Marshall; Secretary, Thomas Campbell.

SAC—Sac County Society, Sac City; President, Phil Schaller; Secretary, Edw. Welch, Jr.

SHELBY—Shelby County Society, Harlan; President, W. W. Wheeler; Secretary, W. E. Cooper.

SIOUX—Sioux County Society, Orange City; President, A. Van der Meide; Secretary, H. Slikerveer.

SIOUX—Rock Valley District Fair Association, Rock Valley; President, E. S. Thayer; Secretary, Dennis Scanlan.

STORY—Story County Society, Nevada; President, D. M. Grove; Secretary, F. H. Greenawalt.

TAMA—Tama County Society, Toledo; President, A. B. Taplin; Secretary, A. G. Smith.

TAYLOR—Taylor County Society, Bedford; President, John J. Clark; Secretary, F. N. Lewis.

UNION—Creston District Fair Association, Creston; President, N. D. Merrill; Secretary, J. M. McCornack.

VAN BUREN—Milton District Society, Milton; President, H. C. Hill; Secretary, D. A. Miller.

WAPELLO—Eldon Big Four Fair Association, Eldon; President, D. A. Jay; Secretary, W. O. Bagley.

WARREN—Warren County Society, Indianola; President, C. C. Reynolds; Secretary, Lee Talbott.

WAYNE—Lineville District Society, Lineville; President, W. B. Wasson; Secretary, G. T. Wright.

WAYNE—Seymour District Society, Seymour; President, L. C. Young; Secretary, R. E. Lowry.

WINNEBAGO—Forest City Park and Fair Association, Forest City; President, O. A. Olson; Secretary, J. A. Peters.

WINNEBAGO—Buffalo Center District and Driving Park Association, Buffalo Center; President, C. G. Pritchard; Secretary, J. P. Boyd.

WINNESHIEK—Winneshiek County Society, Decorah; President, G. F. Baker; Secretary, E. A. Waterbury.

WORTH—Worth County Society, Northwood; President, Nels Thornson; Secretary, E. H. Miller.

WRIGHT—Wright County Society, Clarion; President, David Huntley; Secretary, E. J. Tillinghast.

AGRICULTURAL COLLEGES AND OTHER INSTITUTIONS IN THE UNITED STATES HAVING COURSES IN AGRICULTURE.[a]*

College instruction in agriculture is given in the colleges and universities receiving the benefits of the acts of Congress of July 2, 1862, and August 30, 1890, which are now in operation in all the States and Territories, except Alaska, Hawaii, and Porto Rico. The total number of these institutions is 65, of which 63 maintain courses of instruction in agriculture. In 21 States the agricultural colleges are departments of the State universities. In 15 States and Territories separate institutions having courses in agriculture are maintained for the colored race. All of the agricultural colleges for white persons and several of those for negroes offer four-year courses in agriculture and its related sciences leading to bachelors' degrees, and many provide for graduate study. About 45 of these institutions also provide special, short, and correspondence courses in the different branches of agriculture, including agronomy, horticulture, animal husbandry, poultry raising, cheese making, dairying, sugar making, rural engineering, farm mechanics, and other technical subjects. The officers of the agricultural colleges engage quite largely in conducting farmers' institutes and various other forms of college extension. The agricultural experiment stations with very few exceptions are departments of the agricultural colleges. The total number of persons engaged in the work of education and research in the land-grant colleges and the experiment stations in 1905 was 5,406; the number of students in these colleges, 59,812; the number of students (white) in the four-year college courses in agriculture, 2,638; in short and special courses, 3,885. There were also 1,624 students in agriculture in the separate institutions for negroes. With a few exceptions each of these colleges offers free tuition to residents of the State in which it is located. In the excepted cases scholarships are open to promising and energetic students; and, in all, opportunities are found for some to earn part of their expenses by their own labor. The expenses are from $125 to $300 for the school year.

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[a] Including only institutions established under the land-grant act of July 2, 1862.

*Data following taken from bulletin published by the United States Department of Agriculture.

Agricultural colleges and other institutions in the United States having courses in agriculture.—Continued.

State or Territory	Name of Institution.	Location	President
Alabama	Alabama Polytechnic Institute	Auburn	C. C. Thach, LL.D.
	Agricultural and Mechanical College for Negroes	Normal	W. H. Councill, Ph. D.
Arizona	University of Arizona	Tucson	K. C. Babcock, Ph. D.
Arkansas	University of Arkansas	Fayetteville	J. N. Tilman, B. LL.
California	University of California	Berkeley	B. I. Wheeler, Ph. D., LL.D.
Colorado	The State Agricultural College of Colorado	Fort Collins	B. O. Aylesworth, LL.D., Litt D.
Connecticut	Connecticut Agricultural College	Storrs	R. W. Stimson, A. M.
Delaware	Delaware College	Newark	G. A. Harter, Ph. D.
	State College for Colored Students	Dover	W. C. Jason, M. A.
Florida	University of Florida	Lake City	Andrew Sledd, Ph. D., LL.D.
	Florida State Normal and Industrial College	Tallahassee	N. B. Young, M. A.
Georgia	Georgia State College of Agriculture and Mechanic Arts	Athens	H. C. White, Ph. D.
	Georgia State Industrial College	Savannah	R. R. Wright, LL.D.
Idaho	University of Idaho	Moscow	J. A. MacLean, Ph. D.
Illinois	University of Illinois	Urbana	E. J. James, Ph. D., LL.D.
Indiana	Purdue University	Lafayette	W. E. Stone, Ph. D.
Iowa	Iowa State College of Agriculture and Mechanic Arts	Ames	A. B. Storms, D. D., LL.D.
Kansas	Kansas State Agricultural College	Manhattan	E. R. Nichols, A. M.
Kentucky	Agricultural and Mechanical College of Kentucky	Lexington	J. K. Patterson, Ph. D., LL.D.
	The Kentucky Normal and Industrial Institute for Colored Persons	Frankfort	J. S. Hathaway, M. A., M. D.
Louisiana	Louisiana State University and Agricultural and Mechanical College	Baton Rouge	T. D. Boyd, LL.D.
	Southern University and Agricultural and Mechanical College	New Orleans	H. A. Hill.
Maine	The University of Maine	Orono	G. E. Fellows, Ph. D., LL.D.
Maryland	Maryland Agricultural College	College Park	R. W. Silvester, M. S.
	Princess Anne Academy, Eastern Branch, Maryland Agricultural College	Princess Anne	F. Trigg, M. A.
Massachusetts	Massachusetts Agricultural College	Amherst	W. P. Brooks, Ph. D.[a]
Michigan	Michigan State Agricultural College	Agricultural College	J. L. Snyder, Ph. D.
Minnesota	The University of Minnesota	St. Anthony Park	C. Northrop, LL.D.
Mississippi	Mississippi Agricultural and Mechanical College	Agricultural College	J. C. Hardy, LL.D.
	Alcorn Agricultural and Mechanical College	Lorman	L. J. Rowan, B. S.
Missouri	The University of Missouri	Columbia	R. H. Jesse, LL.D.
	Lincoln Institute	Jefferson City	B. F. Allen, LL.D.
Montana	The Montana College of Agriculture and Mechanic Arts	Bozeman	J. H. Hamilton, M. S.
Nebraska	The University of Nebraska	Lincoln	E. B. Andrews, LL.D.
Nevada	Nevada State University	Reno	J. E. Stubbs, D. D., LL.D.

Agricultural colleges and other institutions in the United States having courses in agriculture—Continued.

State or Territory	Name of Instution	Location	President
New Hampshire	The New Hampshire College of Agriculture and the Mechanic Arts	Durham	W. D. Gibbs, M. S.
New Jersey	Rutgers Scientific School, the New Jersey State College for the Benefit of Agriculture and the Mechanic Arts	New Brunswick	W. H. S. Demarest.
New Mexico	The New Mexico College of Agriculture and Mechanic Arts	Agricultural College	Luther Foster, M. S. A.
New York	Cornell University	Ithaca	J. G. Schurman, D. Sc., LL.D.
North Carolina	The North Carolina College of Agriculture and Mechanic Arts	West Raleigh	G. T. Winston, LL.D.
	The Agricultural and Mechanical College for the Colored Race	Greensboro	J. B. Dudley, LL.D.
North Dakota	North Dakota Agricultural College	Agricultural College	J. H. Worst, LL.D.
Ohio	Ohio State University	Columbus	W. O. Thompson, D. D., LL.D.
Oklahoma	Oklahoma Agricultural and Mechanical College	Stillwater	A. C. Scott, LL. M.
	Agricultural and Normal University	Langston	I. E. Page, M. A.
Oregon	Oregon State Agricultural College	Corvallis	T. M. Gatch, Ph. D.
Pennsylvania	The Pennsylvania State College	State College	G. W. Atherton, LL.D.
Rhode Island	Rhode Island College of Agriculture and Mechanic Arts	Kingston	K. L. Butterfield, A. M.
South Carolina	Clemson Agricultural College of South Carolina	Clemson College	P. H. Mell, Ph. D., LL.D.
	The Colored Normal, Industrial, Agricultural and Mechanical College of South Carolina	Orangeburg	T. E. Miller, LL.D.
South Dakota	South Dakota Agricultural College	Brookings	R. L. Slagle.
Tennessee	University of Tennessee	Knoxville	Brown Ayres, Ph. D., LL.D.
Texas	Agricultural and Mechanical College of Texas	College Station	H. H. Harrington, M. S.
	Prairie View State Normal and Industrial College	Prairie View	E. L. Blackshear.
Utah	The Agricultural College of Utah	Logan	W. J. Kerr, D. Sc.
Vermont	University of Vermont and State Agricultural College	Burlington	M. H. Buckham, D. D., LL.D.
Virginia	The Virginia Agricultural and Mechanical College and Polytechnic Institute	Blacksburg	J. F. McBryde, Ph. D., LL.D.
	The Hampton Normal and Agricultural Institute	Hampton	H. B. Frissell, D. D., LL.D.
Washington	The State College of Washington	Pullman	E. A. Bryan, LL.D.
West Virginia	West Virginia University	Morgantown	D. B. Purinton, Ph. D., LL.D.
	The West Virginia Colored Institute	Institute	J. McH. Jones, A. M.
Wisconsin	University of Wisconsin	Madison	C. R. Van Hise, Ph. D.
Wyoming	University of Wyoming	Laramie	F. M. Tisdel, Ph. D.

[a] Acting president.

AGRICULTURAL EXPERIMENT STATIONS OF THE UNITED STATES, THEIR LOCATIONS, DIRECTORS, AND PRINCIPAL LINES OF WORK.

Station, Location and Director	Principal Lines of Work
Alabama (College), Auburn: J. F. Duggar	Chemistry; botany; soils; analysis of fertilizers and food materials; agronomy; horticulture; plant breeding; diseases of plants and animals; animal husbandry; dairying.
Alabama (Canebrake), Uniontown: J. F. Richeson *	Agronomy; horticulture; floriculture; diseases of plants and animals.
Alabama (Tuskegee), Tuskegee Institute: G. W. Carver	Agronomy; horticulture; diseases of plants; animal industry; dairying.
Arizona, Tucson: R. H. Forbes	Chemistry; botany; agronomy; horticulture; plant breeding; animal husbandry; dairying; irrigation.
Arkansas, Fayetteville: W. G. Vincenheller	Chemistry; agronomy; horticulture; plant breeding; diseases of plants and animals; animal husbandry; dairying; entomology.
California, Berkeley: E. W. Hilgard	Chemistry; soils; bacteriology; fertilizer control; agronomy; horticulture, including viticulture and zymology; botany; meteorology; entomology; animal husbandry; dairying; poultry experiments; irrigation and drainage; silviculture; reclamation of alkali lands; animal and plant pathology; nutrition investigations.
Colorado, Fort Collins: L. G. Carpenter	Chemistry; meteorology; agronomy; horticulture; forestry; plant breeding; diseases of plants; animal husbandry; entomology; irrigation.
Connecticut (State), New Haven: E. H. Jenkins	Chemistry; inspection of fertilizers, foods, feeding stuffs, Babcock test apparatus, and nurseries; diseases of plants; plant breeding; forestry; agronomy; entomology.
Connecticut (Storrs), Storrs: L. A. Clinton	Food and nutrition of man and animals; dairy bacteriology; agronomy; horticulture; poultry culture; dairying.
Delaware, Newark: A. T. Neale	Chemistry; bacteriology; agronomy; horticulture; plant breeding; diseases of plants and animals; animal husbandry; dairying; entomology.
Florida, Lake City: P. H. Rolfs	Chemistry; agronomy; horticulture; diseases of plants; feeding experiments; veterinary science; entomology.
Georgia, Experiment: R. J. Redding	Agronomy; horticulture; plant breeding; entomology; animal husbandry; dairying.
Idaho, Moscow: H. T. French	Chemistry; physics; botany; agronomy; horticulture; plant breeding; diseases of plants; entomology; animal husbandry.
Illinois, Urbana: E. Davenport	Chemistry; bacteriology; agronomy; horticulture; forestry; plant breeding; diseases of plants and animals; animal husbandry; dairying.
Indiana, Lafayette: Arthur Goss	Chemistry; agronomy; horticulture; plant breeding; animal husbandry; dairying; diseases of plants and animals; entomology.

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* Assistant director.

AGRICULTURAL EXPERIMENT STATIONS—CONTINUED.

Station, Location and Director	Principal Lines of Work
Iowa, Ames: C. F. Curtiss	Chemistry; botany; agronomy; horticulture; plant breeding; forestry; diseases of plants; animal husbandry; dairying; entomology; rural engineering; good roads investigation.
Kansas, Manhattan: J. T. Willard	Chemistry; soils; horticulture; plant breeding; agronomy; animal husbandry; poultry experiments; diseases of animals; dairying; entomology; extermination of prairie dogs and gophers; irrigation.
Kentucky, Lexington: M. A. Scovell	Chemistry; soils; inspection of fertilizers, foods, feeding stuffs, orchards and nurseries; agronomy; horticulture; plant breeding; animal husbandry; dairying; diseases of plants; entomology; apiculture.
Louisiana (Sugar) New Orleans: W. R. Dodson	Chemistry; bacteriology; soils; agronomy; horticulture; sugar making; drainage; irrigation.
Louisiana (State), Baton Rouge: W. R. Dodson	Geology; botany; bacteriology; soils, inspection of fertilizers and Paris green; agronomy; horticulture; animal husbandry; diseases of animals; entomology.
Louisiana (North), Calhoun: W. R. Dodson	Chemistry; soils; fertilizers; agronomy; horticulture; animal husbandry; stock raising; dairying.
Maine, Orono: C. D. Woods	Chemistry; botany; inspection of foods, fertilizers, commercial feeding stuffs, seeds, and creamery glassware; horticulture; plant breeding; diseases of plants and animals; food and nutrition of man and animals; poultry raising, and entomology.
Maryland, College Park: H. J. Patterson	Chemistry; agronomy; horticulture; diseases of plants and animals; breeding of plants; animal husbandry; dairying; entomology.
Massachusetts, Amherst: W. P. Brooks	Chemistry; meteorology; inspection of fertilizers, commercial feeding stuffs, creamery glassware and nurseries; agronomy; horticulture; diseases of plants and animals; animal husbandry; dairying; entomology; effect of electricity on plant growth.
Michigan, Agricultural College: C. D. Smith	Chemistry; analysis and control of fertilizers and feeding stuffs; bacteriology; agronomy; horticulture; plant breeding, diseases of plants and animals; animal husbandry; stable hygiene; entomology.
Minnesota, St. Anthony Park, St. Paul: W. M. Liggett	Chemistry; fertilizers; agronomy; horticulture; forestry; diseases of plants and animals; food and nutrition investigations; animal breeding; animal husbandry; dairying; entomology; farm management; farm statistics.
Mississippi, Agricultural College: W. L. Hutchinson	Soils; fertilizers; agronomy; horticulture; plant breeding; animal husbandry; diseases of animals; poultry culture; dairying; entomology.
Missouri (College), Columbia: H. J. Waters	Chemistry; soil survey; botany; agronomy; horticulture; diseases of plants and animals; animal husbandry; plant breeding; dairying; entomology.
Missouri (Fruit), Mountain Grove: Paul Evans	Horticulture; entomology; inspection of orchards and nurseries.

AGRICULTURAL EXPERIMENT STATIONS—CONTINUED.

Station, Location and Director	Principal Lines of Work
Montana, Bozeman: F. B. Linfield	Chemistry; meteorology; botany; agronomy; dry farming; horticulture; animal husbandry; poultry experiments; dairying; entomology; irrigation.
Nebraska, Lincoln: E. A. Burnett	Chemistry; botany; meteorology; soils; agronomy; horticulture; plant breeding; diseases of plants and animals; forestry; animal husbandry; dairying; entomology; irrigation; extermination of prairie dogs.
Nevada, Reno: J. E. Stubbs	Chemistry; botany; soils; agronomy; horticulture; forestry; animal diseases; animal husbandry; entomology; irrigation.
New Hampshire, Durham: W. D. Gibbs	Chemistry; agronomy; horticulture; plant breeding; forestry; animal husbandry; dairying; entomology.
New Jersey (State) New Brunswick: E. B. Voorhees	Chemistry; oyster culture; botany; analysis of fertiliers, foods, and commercial feeding stuffs; agronomy; horticulture; plant breeding; diseases of plants and animals; dairy husbandry; entomology; soil bacteriology; irrigation.
New Jersey (College), New Brunswick: E. B. Voorhees	
New Mexico, Mesilla Park: Luther Foster	Chemistry; botany; agronomy; horticulture; animal husbandry; entomology; irrigation.
New York (State), Geneva: W. H. Jordan	Chemistry; bacteriology; meteorology; inspection of creamery glassware, feeding stuffs, fertiliers, and Paris green; agronomy; horticulture; plant breeding; diseases of plants; animal husbandry; poultry experiments; dairying; entomology; irrigation.
New York (Cornell), Ithaca: L. H. Bailey	Chemistry; fertilizers; agronomy; horticulture; plant breeding; diseases of plants and animals; animal husbandry; poultry experiments; dairying; entomology.
North Carolina, Raleigh: B. W. Kilgore	Chemistry; soils; agronomy; horticulture; animal husbandry; diseases of animals and plants; poultry experiments; dairying; tests of farm machinery.
North Dakota Agricultural College: J. H. Worst	Chemistry; botany; agronomy; plant breeding; horticulture; forestry; diseases of plants and animals; food analysis; animal husbandry; dairying; farm mechanics.
Ohio, Wooster: C. E. Thorne	Agronomy; horticulture; plant breeding; forestry; diseases of plants; animal husbandry; entomology.
Oklahoma, Stillwater: John Fields	Chemistry; agronomy; horticulture; plant breeding; forestry; botany; bacteriology; diseases of plants and animals; animal husbandry; entomology.
Oregon, Corvallis: J. Withycombe	Chemistry; bacteriology; agronomy; horticulture; plant selection; diseases of plants; animal husbandry; poultry experiments; dairying; entomology; irrigation.
Pennsylvania State College: H. P. Armsby	Chemistry; meteorology; horticulture; agronomy; animal husbandry; dairying.
Rhode Island, Kingston: H. J. Wheeler	Chemistry; meteorology; soils; inspection of fertilizers and feeding stuffs; agronomy; horticulture; plant breeding; poultry experiments.

AGRICULTURAL EXPERIMENT STATIONS—CONTINUED.

Station, Location and Director	Principal Lines of Work
South Carolina, Clemson College: J. N. Harper	Chemistry; inspection of fertilizers; botany; agronomy; horticulture; plant breeding; diseases of plants; animal husbandry; dairying; veterinary science; entomology.
South Dakota, Brookings: J. W. Wilson	Chemistry; botany; agronomy; horticulture; plant breeding; diseases of plants and animals; animal husbandry; entomology.
Tennessee, Knoxville: H. A. Morgan	Chemistry; inspection of fertilizers; agronomy; horticulture; plant breeding; seeds; weeds; diseases of plants; animal husbandry; dairying; entomology.
Texas, College Station: J. A. Craig	Chemistry; soils; agronomy; horticulture; animal husbandry; diseases of animals; irrigation; seed testing; feed inspection.
Utah, Logan: P. A. Yoder	Chemistry; alkali soil investigations; agronomy; horticulture; diseases of plants; animal husbandry; dairying; poultry experiments; entomology; irrigation; arid farming.
Vermont, Burlington: J. L. Hills	Chemistry; botany; bacteriology; inspection of fertilizers, feeding stuffs and creamery glassware; agronomy; horticulture; diseases of plants; animal husbandry; dairying.
Virginia, Blacksburg: A. M. Soule	Chemistry; geology; biology; agronomy; horticulture; plant breeding; bacteriology; analysis of foods and soils; inspection of orchards; animal husbandry; veterinary science; dairying; entomology; cider and vinegar making; ferments.
Washington, Pullman: E. A. Bryan	Chemistry; botany; bacteriology; agronomy; horticulture; plant breeding; diseases of plants; animal husbandry; veterinary science; dairying; entomology; irrigation.
West Virginia, Morgantown: J. H. Stewart	Chemistry; inspection of fertilizers, orchards, and nurseries; agronomy; horticulture; diseases of plants; animal husbandry; poultry experiments; entomology.
Wisconsin, Madison: W. A. Henry	Chemistry; bacteriology; soils; agronomy; horticulture; plant breeding; animal husbandry; dairying; irrigation, drainage and agricultural engineering.
Wyoming, Laramie: B. C. Buffum	Botany; meteorology; soils; range improvement; fertilizers; agronomy; plant selection; food analysis; animal husbandry; irrigation.

ASSOCIATION OF AMERICAN AGRICULTURAL COLLEGES AND EXPERIMENT STATIONS.

President, M. H. Buckham, president of the University of Vermont, Burlington, Vt.; secretary-treasurer, J. L. Hills, director Vermont Experiment Station, Burlington, Vt.

OFFICIALS IN CHARGE OF FARMERS' INSTITUTES.

Farmers' Institute Specialist, Department of Agriculture.

John Hamilton, Washington, District of Columbia.

State superintendents.

State or Territory	Name of Official	Postoffice
Alabama	C. A. Cary, Alabama Polytechnic Institute	Auburn.
	G. W. Carver, Director Agricultural Experiment Station	Tuskegee Institute.
Alaska	C. C. Georgeson, Agricultural Experiment Station	Sitka.
Arizona	R. H. Forbes, Director Agricultural Experiment Station	Tucson.
Arkansas	J. M. Tillman, President University of Arkansas	Fayetteville.
California	E. J. Wickson, University of California	Berkeley.
Colorado	W. L. Carlyle, State Agricultural College	Fort Collins.
Connecticut	J. F. Brown, Secretary State Board of Agriculture	N. Stonington.
	J. G. Schwink, Secretary Connecticut Dairymen's Association	Hartford.
	H. C. C. Miles, Secretary Connecticut Pomological Society	Milford.
Delaware	Wesley Webb, Director of Farmers' Institutes	Dover.
	A. T. Neale, Director Agricultural Experiment Station	Newark.
Florida	C. M. Conner, University of Florida	Lake City.
Georgia	H. C. White, President State College of Agriculture	Athens.
	Harvie Jordan, Director of Farmers' Institutes	Atlanta.
Hawaii	J. G. Smith, Agricultural Experiment Station	Honolulu.
Idaho	H. T. French, Director Agricultural Experiment Station	Moscow.
Illinois	Frank H. Hall, Secretary Farmers' Institutes	Springfield.
Indiana	W. C. Latta, Purdue University	Lafayette.
Iowa	J. C. Simpson, Secretary State Board of Agriculture	Des Moines.
Kansas	J. H. Miller, Superintendent of Farmers' Institutes	Manhattan.
Kentucky	Hubert Vreeland, Commissioner of Agriculture	Frankfort.
Louisiana	Charles Schuler, Commissioner of Agriculture	Baton Rouge.
Maine	A. W. Gilman, Commissioner of Agriculture	Augusta.
Maryland	W. L. Amoss, Director of Farmers' Institutes	Benson.
Massachusetts	J. L. Ellsworth, Secretary State Board of Agriculture	Boston.
Michigan	L. R. Taft, Superintendent of Farmers' Institutes	Agricultural College.

OFFICIALS IN CHARGE FARMERS' INSTITUTES—CONTINUED.

State or Territory	Name of Official	Postoffice
Minnesota	O. C. Gregg, Director of Farmers' Institutes	Lynd.
Mississippi	J. C. Hardy, President Agricultural and Mechanical College	Agricultural College.
Missouri	George B. Ellis, Secretary State Board of Agriculture	Columbia.
Montana	F. B. Linfield, Director Agricultural Experiment Station	Bozeman.
Nebraska	E. A. Burnett, Director Agricultural Experiment Station	Lincoln.
Nevada	J. E. Stubbs, President Nevada State University	Reno.
New Hampshire	N. J. Bachelder, Secretary State Board of Agriculture	Concord.
New Jersey	Franklin Dye, Secretary State Board of Agriculture	Trenton.
New Mexico	Luther Foster, President Agricultural and Mechanical College	Agricultural College.
New York	F. E. Dawley, Director of Farmers' Institutes	Fayetteville.
North Carolina	S. L. Patterson, Commissioner of Agriculture	Raleigh.
North Dakota	E. E. Kaufman, Director of Farmers' Institutes	Bismarck.
Ohio	T. L. Calvert, Secretary State Board of Agriculture	Columbus.
Oklahoma	C. A. McNabb, Secretary Board of Agriculture	Guthrie.
Oregon	J. Withycombe, Director Agricultural Experiment Station	Corvallis.
Pennsylvania	A. L. Martin, Deputy Secretary of Agriculture	Harrisburg.
Porto Rico	D. W. May, Agricultural Experiment Station	San Juan.
Rhode Island	John G. Clarke, Secretary State Board of Agriculture	Providence.
South Carolina	J. N. Harper, Director Agricultural Experiment Station	Clemson College.
South Dakota	M. F. Greeley, Superintendent of Farmers' Institutes	Gary.
Tennessee	W. W. Ogilvie, Commissioner of Agriculture	Nashville.
Texas	J. W. Carson, Director of Farmers' Institutes	College Station.
Utah	P. A. Yoder, Director Agricultural Experiment Station	Logan.
Vermont	Geo. Aitken, Secretary State Board of Agriculture	Woodstock.
Virginia	G. W. Koiner, Commissioner of Agriculture	Richmond.
	A. M. Soule, Director Agricultural Experiment Station	Blacksburg.
Washington	E. A. Bryan, President Agricultural College	Pullman.
	E. E. Elliott Agricultural College	Pullman.
West Virginia	H. E. Williams, Assistant Secretary of Agriculture	Sunlight.
Wisconsin	G. McKerrow Director of Farmers' Institutes	Madison.
Wyoming	B. C. Buffum, Director Agricultural Experiment Station	Laramie.

AMERICAN ASSOCIATION OF FARMERS' INSTITUTE WORKERS.

President, G. C. Creelman, president of the Ontario Agricultural College, Guelph, Ontario; secretary-treasurer, John Hamilton, Farmers' Institute Specialists, U. S. Department of Agriculture, Washington, D. C.

STATE OFFICIALS IN CHARGE OF AGRICULTURE.*

Commissioners of Agriculture.

State or Territory	Name of Official	Postoffice
Alabama	R. R. Poole	Montgomery.
Arkansas	H. T. Bradford	Little Rock.
Florida	B. E. McLin	Tallahassee.
Georgia	O. B. Stevens	Atlanta.
Idaho	Allen Miller, Commissioner of Immigration, etc.	Boise.
Kentucky	Hubert Vreeland	Frankfort.
Louisiana	Charles Schuler	Baton Rouge.
Maine	A. W. Gilman	Augusta.
Montana	J. A. Ferguson	Helena.
New York	Chas. A. Wieting	Albany.
North Carolina	S. L. Patterson	Raleigh.
North Dakota	W. C. Gilbreath	Bismarck.
New Mexico	J. W. Raynolds, Secretary of State	Santa Fe.
Pennsylvania	N. B. Critchfield, Secretary of Agriculture	Harrisburg.
Philippine Islands	W. C. Welborn, Chief Bureau of Agriculture	Manila.
Porto Rico	Wm. H. Elliott, Commissioner of the Interior	San Juan.
South Carolina	E. J. Watson	Columbia.
Tennessee	W. W. Ogilvie	Nashville.
Texas	W. J. Clay	Austin.
Virginia	Geo. W. Koiner	Richmond.
Washington	A. W. Frater, Deputy Secretary of State	Olympia.

Secretaries of State Boards of Agriculture.

California	Albert Lindley	Sacramento.
Colorado	A. M. Hawley	Fort Collins.
Connecticut	J. F. Brown	North Stonington.
Delaware	Wesley Webb	Dover.
Hawaii	C. S. Holloway	Honolulu.
Illinois	W. C. Garrard	Springfield.
Indiana	Chas. Downing	Indianapolis.
Iowa	J. C. Simpson	Des Moines.
Kansas	F. D. Coburn	Topeka.
Maryland	Wm. T. P. Turpin, Superintendent of Immigration	Centerville.
Massachusetts	J. L. Ellsworth	Boston.
Michigan	Addison M. Brown	Agricultural College.
Minnesota	E. W. Randall, Secretary State Agricultural Society	St. Paul.

STATE OFFICIALS IN CHARGE OF AGRICTLTURE—CONTINUED.

State or Territory	Name of Official	Postoffice
Missouri	George B. Ellis	Columbia.
Nebraska	Robt. W. Furnas	Brownville.
Nevada	Louis Bevier	Carson City.
New Hampshire	N. J. Bachelder	Concord.
New Jersey	Franklin Dye	Trenton.
North Carolina	T. K. Bruner	Raleigh.
Ohio	T. L. Calvert	Columbus.
Oklahoma	C. A. McNabb	Guthrie.
Oregon	M. D. Wisdom	Portland.
Rhode Island	John G. Clarke	Providence.
South Dakota	Walter B. Dean	Yankton.
Vermont	George Aitken	Woodstock.
West Virginia	J. B. Garvin	Charleston.
Wisconsin	John M. True	Madison.
Wyoming	C. T. Johnston, State Engineer	Cheyenne.

[*] Officials of territories and island dependencies are included. So far as learned, Arizona, Mississippi, New Mexico and Utah have no state official charged with agricultural interests, but letters addressed to the secretary of state would probably receive attention.

NATIONAL DAIRYY ASSOCIATIONS.

Name of Organization	Secretary	Postoffice
National Association of State Dairy and Food Departments	R. M. Allen	Lexington, Ky.
National Dairy Union	Charles Y. Knight	154 Lake st., Chicago.
National Creamery Buttermakers' Association	E. Sadendorf	Clinton, Ill.
Boston Co-operative Milk Producers' Association	W. A. Hunter	10 Florence st., Worcester, Mass.
Five States Milk Producers' Association	H. T. Coon	Homer, N. Y.

AMERICAN NATIONAL LIVE STOCK ASSOCIATION.

President, Murdo Mackenzie, Trinidad, Colo.; secretary, W. M. Tomlinson, Denver.

AMERICAN ASSOCIATION OF LIVE STOCK HERD BOOK SECRETARIES.

President, C. R. Thomas, Independence, Mo.; secretary, Charles F. Mills, Springfield, Ill.

NATIONAL WOOL GROWERS' ASSOCIATION.

President, Francis E. Warren, Cheyenne; secretary, George S. Walker, Cheyenne.

THE CORN BELT MEAT PRODUCERS' ASSOCIATION.

President, A. L. Ames, Buckingham, Iowa; secretary, H. C. Wallace, Des Moines, Iowa.

PROTECTION AGAINST CONTAGION FROM FOREIGN CATTLE.

An act of Congress of August 28, 1894, prohibits the importation of cattle and cattle hides, but by the act of March 2, 1895, making appropriations for the Department of Agriculture, it is provided that the prohibition may be suspended by the President whenever the Secretary of Agriculture shall certify to the President what countries or parts of countries are free from contagious or infectious diseases of domestic animals. The President, by proclamation of November 8, 1895, lifted the embargo with reference to Norway, Sweden, Holland, Great Britain, Ireland, the Channel Islands, and the countries of North, Central and South America so as to admit cattle under sanitary regulations prescribed by the Secretary of Agriculture; also from all countries so as to admit hides under regulations prescribed by the Secretary of the Treasury.

STOCK BREEDERS' ASSOCIATIONS.**

Names and addresses of stock association secretaries, with breeds and numbers of registered live stock in United States, December 31, 1905.

CATTLE

Breed	Secretary	Postoffice	Number Registered		Number Living	
			Male	Female	Male	Fe'ale
Aberdeen Angus	Thos. McFarlane	Union Stock Yards, Chicago, Ill	38,188	48,604	27,496	34,994
Ayrshire	C. M. Winslow	Brandon, Vt	9,689	20,883	*	*
Devon	L. P. Sisson	Newark, Ohio	8,084	13,717	3,500	10,000
Dutch Belted	H. B. Richards	Easton, Pa	573	1,265	*	*
Galloway	C. W. Gray	Union Stock Yards, Chicago, Ill	16,620	11,080	8,370	6,480
Guernsey	Wm. H. Caldwell	Peterboro, N. H	10,683	19,889	6,000	12,000
Hereford	C. R. Thomas	225 W. 12th street, Kansas City, Mo	112,780	115,620	45,000	60,000
Holstein Friesian	Frederick L. Houghton	Brattleboro, Vt	46,031	95,037	14,199	31,756
Jersey	J. J. Hemingway	8 W. 17th street, New York, N. Y	71,907	193,978	*	*
Polled Durham	Fletcher S. Hines	Indianapolis, Ind	5,403	6,460	3,935	4,845
Red Polled	H. A. Martin	Gotham, Wis	14,601	25,006	5,500	10,500
Shorthorn	John W. Groves	Union Stock Yards, Chicago, Ill	249,800	391,600	87,430	176,220
Sussex	Overton Lea	Nashville, Tenn	78	185	50	100
Swiss, Brown	C. D. Nixon	Oswego, N. Y	2,159	3,150	300	1,500

**Under the provisions of paragraph 473 of the act of July 24, 1897, amended March 3, 1903, any animal imported specially for breeding purposes shall be admitted free, provided that no such animal shall be admitted free unless pure bred, of a recognized breed, and duly registered in the book of record established for that breed. The secretary of the treasury, upon the advice of the secretary of agriculture, issued April 24, 1903, regulations for the importation of animals under this law, and designated the recognized breeds and the books of record established for these breeds.

*No data.

HORSES

Cleveland Bay	R. P. Stericker	80 Chestnut ave., West Orange, N. J	1,236	502	1,050	400
Clydesdale	R. B. Ogilvie	Union Stock Yards, Chicago, Ill	*12,370		**	**
Coach, French	Chas. C. Glenn	Columbus, Ohio	130	4	125	4
Coach, German	J. Crouch	Lafayette, Ind	1,656	246	1,500	225
Coach, German (Oldenburg)	C. E. Stubbs	Fairfield, Iowa	260	23	190	14
Draft, Belgian	J. D. Connor, Jr	Wabash, Ind	2,056	266	2,055	265

Draft, French	C. E. Stubbs	Fairfield, Iowa	9,000	5,000	**	**
Hackney	A. H. Godfrey	Box 111, Madison Square, New York City	†726	†1,542	†684	†1,416
Morgan	H. T. Cutts	Middlebury, Vt	†5,021	†2,800	†3,765	†2,100
Percheron	George W. Stubblefield	Union Stock Yards, Chicago, Ill	1,640	1,460	19,000	12,000
Percheron	Charles C. Glenn	Columbus, Ohio	928	102	913	94
Saddle Horse, American	I. B. Nall	Louisville, Ky	‡2,529	3,549	**	**
Shetland Pony	Mortimer Levering	Lafayete, Ind	2,300	3,500	2,000	2,500
Shire	Charles Burgess	Wenona, Ill	6,062	2,148	**	**
Suffolk	Alex. Galbraith	Janesville, Wis	159	88	*150	
Thoroughbred	James E. Wheeler	571 Fifth ave., New York, N. Y	*45,309		**	**
Trotter, American	Wm. H. Knight	355 Dearborn st., Chicago, Ill	42,597	†152,700	**	**
Jacks and Jennies	J. W. Jones	Columbia, Tenn	1,000	750	750	500

SHEEP

Cheviot	F. E. Dawley	Fayetteville, N. Y	*10,700		575	2,650
Cotswold	F. W. Harding	Waukesha, Wis	*36,610		*14,000	
Dorset Horn	J. E. Wing	Mechanicsburg, Ohio	1,395	3,703	1,000	2,800
Hampshire Down	Comfort A. Tyler	Nottawa, Mich	5,573	12,844	3,000	9,000
Leicester	A. J. Temple	Cameron, Ill	3,538	5,437	2,972	4,567
Lincoln	Bert Smith	Charlotte, Mich	5,754	8,246	4,100	5,900
Merino (Delaine)	H. G. McDowell	Canton, Ohio	*9,401		*6,900	
Merino (Delaine)	George A. Henry	R. F. D. 8, Bellefontaine, Ohio	8,000	14,300	2,500	8,000
Merino (Delaine)	R. P. Berry	R. F. D. 3, Eighty-four, Pa	†5,054	†11,259	†1,500	†3,000
Merino (Delaine)	J. B. Johnson	248 W. Pike st., Canonsburg, Pa	6,805	11,599	1,500	5,000
Merino (French)	Dwight Lincoln	Milford Center, Ohio	*34,075		**	**
Merino (German)	E. M. Moore	Orchard Lake, Mich	162	191	105	175
Merino (Spanish)	E. N. Ball	Ann Arbor, Mich	12,550	37,700	400	4,300
Merino (Spanish)	Wesley Bishop	R. F. D. 1, Delaware, Ohio	16,691	33,384	2,842	8,035
Merino (Spanish)	J. H. Earll	Skaneateles, N. Y	7,916	11,912	280	1,875
Merino (Spanish)	J. P. Ray	R. F. D. 3, E. Bloomfield, N. Y	1,275	1,500	100	200
Merino (Spanish)	C. A. Chapman	Middlebury, Vt	*217,850		**	**
Oxford Down	W. A. Shafor	Hamilton, Ohio	*32,798		**	**
Shropshire	Mortimer Levering	Lafayette, Ind	100,000	134,000	20,000	40,000
Southdown	Frank S. Springer	Springfield, Ill	*19,933		*10,200	
Suffolk	George W. Franklin	Des Moines, Iowa	*1,013		*550	

*Total of males and females.
**No data.
†Estimate for 1904.
‡Includes geldings.

STOCK BREEDERS' ASSOCIATIONS—CONTINUED.

HOGS

Breed	Secretary	Postoffice	Number Registered		Number Living	
			Male	Female	Male	Fe'ale
Berkshire	Frank S. Springer	510 E. Monroe st., Springfield Ill	*88,080	--------	*33,000	--------
Cheshire	Ed S. Hill	Freeville, N. Y	1,225	2,115	275	575
Chester White	Ernest Freigau	Columbus, Ohio	5,665	8,912	600	2,000
Chester Ohio Improved	J. C. Hiles	Cleveland, Ohio	3,403	9,000	1,800	6,200
Duroc Jersey	T. B. Pearson	Thorntown, Ind	8,026	18,450	**	**
Duroc Jersey	Robert J. Evans	Peoria, Ill	21,800	55,000	*30,000	--------
Hampshire (Thin Rind)	E. C. Stone	Armstrong, Ill	294	540	155	387
Poland China	W. M. McFadden	Union Stock Yards, Chicago, Ill	52,331	130,620	27,000	68,000
Poland China	A. M. Brown	Drawer 16, Winchester, Ind	32,000	72,000	10,000	23,000
Poland China	Geo. F. Woodworth	Maryville, Mo	39,008	93,234	2,000	18,000
Poland China	H. P. Wilson	Gadsden, Tenn	691	1,030	400	600
Tamworth	E. N. Ball	Ann Arbor, Mich	†1,949	--------	†1,200	--------
Yorkshire	Harry G. Krum	White Bear Lake, Minn	2,860	3,640	2,000	3,200

*Total of males and females.
**No data.
†Estimate for 1904

SANITARY OFFICERS IN CHARGE OF LIVESTOCK INTERESTS.

State or Territory	Name and Postoffice	Official Position
Alabama	C. A. Cary, Auburn	Professor of veterinary science.
Arizona	J. D. Carter, Prescott	Secretary live stock sanitary commission.
	J. C. Norton, Phoenix	Veterinarian.
Arkansas	R. R. Dinwiddie, Fayetteville	State veterinarian.
California	Chas. Keane, Sacramento	State veterinarian.
Colorado	L. B. Sylvester, Denver	President state board of stock inspection.
	Charles G. Lamb, Denver	State veterinary surgeon.
Connecticut	Heman O. Averill, Hartford	Commissioner for domestic animals.
Delaware	Alex. Lowber, Wilmington	Secretary state board of health.
	H. P. Eves, Newark	Instructor in veterinary science, Delaware College.
Florida	Chas. F. Dawson, Lake City	Professor of veterinary science.
Georgia	O. B. Stevens, Atlanta	Commissioner of agriculture.
Idaho	George E. Noble, Boise	State veterinarian.
Illinois	H. E. Wadsworth, Springfield	Secretary board of live stock commissioners.
	C. P. Lovejoy, Princeton	State veterinarian.
Indiana	A. W. Bitting, Lafayette	State veterinarian.
Iowa	Paul O. Koto, Forest City	State veterinary surgeon.
Kansas	John D. Baker, Peabody	Live stock sanitary commissioner.
Kentucky	F. T. Eisenman, Louisville	State veterinarian.
Louisiana	W. H. Dalrymple, Baton Rouge	Veterinarian state experiment station.
Maine	John M. Deering, Saco	State cattle commissioners.
	F. S. Adams, Bowdoinham	
Maryland	G. Allen Jarman, Chestertown	Chief veterinary inspector.
	Wade H. D. Warfield, Baltimore	Secretary live stock sanitary board.
Massachusetts	Austin Peters, Boston	Chief of the cattle bureau of state board of agriculture.
Michigan	F. C. Wells, Saline	State veterinarian.
	H. H. Hinds, Stanton	President state live stock sanitary commission.
Minnesota	C. E. Cotton, Minneapolis	Veterinarian live stock sanitary board.
	H. M. Bracken, St. Paul	Secretary state board of health.
Mississippi	J. C. Robert, Agricultural College	Professor of veterinary science.
Missouri	D. F. Luckey, Columbia	State veterinarian.
	Geo. B. Ellis, Columbia	Secretary state board of agriculture.
Montana	W. G. Preuitt, Helena	Secretary live stock commission.
	M. E. Knowles, Helena	State veterinarian.
Nebraska	W. A. Thomas, Lincoln	State veterinarian.
Nevada	I. W. O'Rourke, Reno	State veterinarian.
New Hampshire	N. J. Bachelder, Concord	Secretary board of cattle commissioners.
New Jersey	Franklin Dye, Trenton	Secretary tuberculosis commission.

SANITARY OFFICERS IN CHARGE OF LIVE STOCK INTERESTS—CONTINUED.

State of Territory	Name and Postoffice	Official Position
New Mexico	W. C. Barnes, Las Vegas	Secretary cattle sanitary board.
	Harry F. Lee, Albuquerque	Secretary sheep sanitary board.
New York	C. A. Wieting, Albany	Commissioner department of agriculture.
	W. H. Kelly, Albany	Chief veterinarian.
North Carolina	Tait Butler, Raleigh	State veterinarian.
	S. L. Patterson, Raleigh	Commissioner of agriculture.
North Dakota	L. Van Es, Fargo	Chief state veterinarian.
Ohio	T. L. Calvert, Columbus	Secretary state live stock commission.
	Paul Fischer, Columbus	State veterinarian.
Oklahoma	Thomas Morris, Guthrie	Secretary live stock sanitary commission.
	L. D. Brown, Guthrie	Territorial veterinarian.
Oregon	Wm. McLean, Portland	State veterinarian.
Pennsylvania	Leonard Pearson, Philadelphia	State veterinarian.
Rhode Island	John G. Clarke, Providence	Secretary state board of agriculture.
	John S. Pollard, Providence	Veterinarian, state board of agriculture.
South Carolina	Louis A. Klein, Clemson College	State veterinarian.
South Dakota	J. P. Foster, Huron	State veterinarian.
Tennessee	R. H. Kittrell, Murfreesboro	State live stock commissioner.
Texas	R. J. Kleberg, Corpus Christi	Secretary live stock commission.
Utah	John Austin, Heber City	President state board of sheep commissioners.
Vermont	G. H. Terrill, Morrisville	Secretary cattle commission.
Virginia	J. G. Ferneyhough, Blacksburg	State veterinarian.
Washington	S. B. Nelson, Pullman	State veterinarian.
West Virginia	J. B. Garvin, Charleston	Secretary board of agriculture.
Wisconsin	Evan D. Roberts, Janesville	State veterinarian.
	John M. True, Madison	Secretary state sanitary board.
Wyoming	Geo. T. Seabury, Cheyenne	State veterinarian.
	George S. Walker, Cheyenne	Secretary state board of sheep commissioners.

FORESTRY ASSOCIATIONS.

American Forestry Association—President, Hon. James Wilson, Secretary of Agriculture; vice-presidents, Edward Everett Hale, F. E. Weyerhaeuser, James W. Pinchot, B. E. Fernow, John L. Kaul; secretary, H. M. Suter, Washington, D. C.

International Society of Arboriculture—President, Gen. William J. Palmer, Colorado Springs, Colo.; vice-president, Henry John Elwes, F. R. S., Colesborne, Cheltenham, England; secretary, J. P. Brown, Connersville, Ind.

Society of American Foresters—President, Gifford Pinchot, Washington, D. C.; secretary, George B. Sudworth, Washington, D. C.

SCHOOLS OF FORESTRY.

Yale Forest School, Yale University, New Haven, Conn.—A two-year graduate course, leading to the degree of Master of Forestry. The junior year begins in July, the first term being conducted at Milford, Pike county, Pa. Under the direction of the officers of the Yale Forest School a two-month popular course, July and August, also is conducted at Milford, Pa. Prof. Henry S. Graves, director.

Biltmore Forest School, Biltmore, N. C.—An undergraduate course, covering one year, without vacation. Dr. C. A. Schenck, director.

University of Michigan Forest School, part of the general Department of Literature, Science, and the Arts, Ann Arbor, Mich.—A two-year graduate course, leading to the degree of Master of Science in Forestry. Filibert Roth, Professor of Forestry.

Harvard University Forest School, Cambridge, Mass.—A four-year undergraduate course, in connection with the Lawrence Scientific School. R. T. Fisher, in charge of curriculum.

Iowa State College of Agriculture and Mechanic Arts, Ames, Iowa—A four-year course in forestry and horticulture, in which particular attention is paid to farm forestry, leading to the degree of Bachelor of Science. A course is also given adapted to students in the civil engineering department. H. P. Baker, assistant professor, in charge of forestry.

University of Maine, Department of Forestry, Orono, Me.—A four-year undergraduate course, leading to the degree of Bachelor of Science in Forestry. Gordon E. Tower, in charge of department.

Michigan Agricultural College, Department of Forestry, Agricultural College, Mich.—A four-year undergraduate course, leading to the degree of Bachelor of Science. E. E. Bogue, professor of forestry.

University of Minnesota, Forest School, St. Anthony Park, Minn.—A four-year undergraduate course, leading to the degree of Bachelor of Science in Forestry. Prof. Samuel B. Green, in charge of school.

Univeristy of Nebraska, Forest Department, connected with the Industrial College, Lincoln, Neb.—A four-year undergraduate course, leading to the degree of Bachelor of Science in Forestry. Frank G. Miller, professor of forestry.

NATIONAL BEE KEEPERS' ASSOCIATION.

President, J. U. Harris, Grand Junction, Colo.; secretary, W. Z. Hutchinson, Flint, Mich.; general manager and treasurer, N. E. France, Platteville, Wis.

NATIONAL ASSOCIATION OF ECONOMIC ENTOMOLOGISTS.

President, H. Garman, Lexington, Ky.; secretary, H. E. Summers, Ames, Iowa.

ASSOCIATION OF OFFICIAL AGRICULTURAL CHEMISTS.

President, C. G. Hopkins, Agricultural Experiment Station, Urbana, Ill.; secretary, H. W. Wiley, Chemist, Department of Agriculture, Washington, D. C.

NATIONAL HORTICULTURAL AND KINDRED SOCIETIES.

Name of Organization	Secretary	Postoffice
American Apple Growers' Congress	T. C. Wilson	Hannibal, Mo.
American Association of Nurserymen	George C. Seager	Rochester, N. Y.
American Carnation Society	Albert M. Herr	Lancaster, Pa.
American Cranberry Growers' Association	A. J. Rider	Hammonton, N. J.
American Federation of Horticultural Societies	Chas. E. Bassett	Fennville, Mich.
American Institute Farmers' Club	Wm. A. Eagleson	19-21 West 44th street, New York, N. Y.
American Institute, Horticultural Section	Leonard Barron	19-21 West 44th street, New York, N. Y.
American Nurserymen's Protective Association	Thomas B. Meehan	Dreshertown, Pa.
American Pomological Society	John Craig	Ithaca, N. Y.
American Retail Nurserymen's Protective Association	Guy A. Bryant	Princeton, Ill.
American Rose Society	Wm. J. Stewart	11 Hamilton place, Boston, Mass.
Cider and Cider-Vinegar Makers' Association of the Northwest	George Miltenberger	213 N. 2d street, St. Louis, Mo.
Chrysanthemum Society of America	David Fraser	Penn and Homewood ave., Pittsburg, Pa.
Eastern Nurserymen's Association	Wm. Pitkin	Rochester, N. Y.
International Apple Shippers' Association	A. Warren Patch	17 N. Market street, Boston, Mass.
Mississippi Valley Apple Growers' Association	James Handly	Quincy, Ill.
Missouri Valley Horticultural Society	A. V. Wilson	R. F. D., Muncie, Kan.
National League of Commission Merchants of the United States	A. Warren Patch	17 N. Market street, Boston, Mass.
National Nut Growers' Association	J. F. Wilson	Poulan, Ga.
Northwestern Fruit Growers' Association	C. D. Huffman	Lagrande, Or.
Nurserymen's Mutual Protection Association	Geo. C. Searger	Rochester, N. Y.
Peninsula Horticultural Society	Wesley Webb	Dover, Del.
Society of American Florists and Ornamental Horticulturists	Wm. J. Stewart	11 Hamilton place, Boston, Mass.
Southwestern Nurserymen's Association	J. A. Taylor	Wynnewood, Ind. T.
Western Association of Nurserymen	E. J. Holman	Leavenworth, Kan.

ORGANIZATIONS FOR PROTECTION OF BIRDS AND GAME.

American Ornithologists' Union, Committee on Protection of North American Birds	A. K. Fisher, chairman	Dept. of Agriculture, Washington, D. C.
Bird Protective Society of America	Edward C. Pease	28 Stafford Bldg., Buffalo, N. Y.
Boone and Crockett Club	Madison Grant	11 Wall street, New York, N. Y.
League of American Sportsmen	Arthur F. Rice	155 Pennington ave., Passaic, N. J.
National Association of Audubon Societies	Wm. Dutcher, president	141 Broadway, New York, N. Y.
National Association of Game and Fish Wardens	George L. Carter	Lincoln, Neb.
National Game, Bird and Fish Protective Association	George L. Carter	Lincoln, Neb.
New York Zoological Society	Madison Grant	11 Wall street, New York, N. Y.
North American Fish and Game Protective Association	E. T. D. Chambers	Quebec, Canada.

FARMERS' NATIONAL CONGRESS.

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